

THE COMMERCIAL REVIEW.

Vol. VII, Old Series.

JULY, 1849.

Vol. I, No. I, N. S.

ART. I.—COMMUNICATION BETWEEN THE ATLANTIC AND PACIFIC OCEANS.

PROGRESS OF AMERICAN POPULATION AND TERRITORIES; CALIFORNIA AND OREGON; PROJECTED COMMUNICATIONS ACROSS THE CONTINENT BY LAND AND WATER; PANAMA AND TEHUANTEPEC CANALS AND RAILROADS; TRADE AND COMMERCE OF THE EAST; RAILROAD FROM TAMPICO AND NATCHEZ TO MAZATLAN; FROM VERA CRUZ TO ACAPULCO; FROM GALVESTON TO SAN DIEGO; FROM ST. LOUIS TO SAN FRANCISCO; FROM MICHIGAN TO OREGON; FROM MEMPHIS TO SAN DIEGO; PROGRESS OF RAILROAD ENTERPRISE.

FROM a period almost coeval with the first settlement of America, we find the idea of a connection between the two great oceans, washing its eastern and western shores, by some safe and expeditious passage, either over the peninsula or through the interior of the continent, continually suggested, and receiving various degrees of consideration. The subject has assumed, in the present day, a new and higher degree of interest and importance, from the fact, so little to have been anticipated, that the American people, with the extraordinary energy of their democratic institutions, having filled up with a dense population all the earlier discovered and occupied territories, have, while yet scarce "hardened into manhood," swept across the "impassable" mountains, overspread the great valleys, and penetrated in immense numbers through the wildernesses of the Oregon, the Sacramento, and the Gila, to the very shores of the Pacific Ocean. The free and unconquerable spirit of the Puritan, the Cavalier, and the Huguenot, creates new revolutions in the regions of the setting sun.

But sixty years ago, when the first American *census* was taken, the main slope of the Apalachian Mountains, was found to be the western barrier, confining nine-tenths of the population within something like three hundred thousand square miles of territory.* The four millions of inhabitants at that time registered, have swelled in this period to nearly twenty-three millions, and the three hundred thousand miles of inhabited territory to two millions of miles, excluding the late acquisitions of Oregon, California, and New Mexico, embracing, by the estimation of

* Darby's Letter to Mr. Calhoun. Com. Review, Vol. III.

the land office, eight hundred and sixty-seven thousand five hundred and forty-one additional square miles! Thus have we a people, blessed with freedom and enterprise, doubling in every generation their numbers, and occupying an empire three millions of square miles in extent—scarcely less than the whole of Europe, *including* Russia, and wanting *one-third* only of the great Russian empire, extending from the Baltic, over *three continents*, to the western spurs of the Rocky Mountains. The sea-coasts alone of this enormous republic stretch out *five thousand one hundred and twenty miles*; or, if we follow the irregularities of the bays and islands, *thirty-three thousand and sixty-three miles*—greater, by one-third, than the whole circuit of the earth! *

Frightful as have been the wastes to be crossed by this population, the "feet of men, and even children and tender women, have been beating out a track," over which the heavy wagon has rattled, among crags and rocks, in *defiance* of the vain obstacles of nature.

Most wonderful of all—in the depths of the valleys, and by the streams of the rivers they have crossed, has been discovered a region that realizes the fabled *El Dorado*, for which De Soto and Cortes and Raleigh so vainly sighed—possessing in its bowels illimitable treasures of virgin gold, so rich and rare, that they promise to easy labor, almost without effort, untold wealth, and to the world a supply of the precious metals which shall exceed all the "Orient Ind," in the days of Solomon or since, has yielded from its prolific bowels, or has been searched to, where the "sunny fountains" of "Old Afric"

"Roll down their golden sand."

Never, in the history of mankind—not even when Columbus carried to Europe the tawny Indian, or when extravagant stories of the wealth of the Mexicans and of Peru, were wafted across the ocean, or when the Crusaders were marching upon the East, or the "South Sea Bubble" or the "Mississippi Scheme" were at their height—never has been excitement wound up to a higher pitch, or expectancy upon the keener alert. Men of all ages—of all arts, and pursuits, and professions, from all classes of society, even surrounded with the greatest comforts and highest allurements of home—have forgotten their legitimate avocations, thrown aside lucrative posts and callings as utterly worthless, and, braving the ocean for thousands and tens of thousands of miles, or inhospitable climes, and frightful journeys through trackless wildernesses, in handfuls or in vast cavalcades, full of hope and enterprise, taken up their extraordinary pilgrimage to endure the fierce hardships of the *placers* of the Sacramento, and the mountain gorges, in their ceaseless search for GOLD! Wonderful, wonderful is this great passion for wealth, which, like a despot, rules over our wills and controls and masters our associations and affections, and breaks up, with remorseless strokes, every link and bond and sacred connection in life! God, by it, works out the DESTINIES OF MAN.†

* Report Coast Survey, under Prof. Bache, 1848.

† The Spaniards would appear to have been on this California gold track three centuries ago, but destiny reserved the prize for us. We quote from the "American Review."

"At the same period, also, while De Soto worked his weary way amidst the

But we have not time for these reflections. It is now computed that the whole number of persons who have reached California cannot vary far from twenty thousand,* and that those on the way, and to start, will, in a few months more, swell the aggregate to at least fifty or sixty thousand—sufficient to form a state government. What may be the future population of this region it is now impossible to argue, though embracing, as it does, an area of five hundred and twenty-six thousand and seventy-eight square miles, if we give to it the average density of *two* to the square mile, the density of the Valley of the Mississippi as far back as 1810, when but few states had been formed, we would have one million of inhabitants; or, adopting the present density of Pennsylvania, there would be abundant room for twenty millions. A similar computation being made for Oregon, which has three hundred and forty-one thousand four hundred and sixty-three square miles, would give either seven hundred thousand or fifteen millions. It would not be an unreasonable calculation, we think, to estimate a population west of the Rocky Mountains, in the course of one century from this, *as large*

mountains and among the reedy marshes of the East, and the second Pizarro searched vainly for the *El Dorado* of the South, Vasquez Coronado was equally indefatigable in his search for the traditionary golden cities and inexhaustible mines of New Mexico and California. In common with De Soto and the South American explorers, he failed in the primary object of his expedition; failed, too, if we may fully credit the announced discoveries in California, when the coveted prize of his toil was almost within his grasp.

The expedition by Coronado was undertaken under an implicit belief in the existence of vast treasures in the regions north of Mexico, falling within the territories known as New Mexico and California, and now constituting part of the republic of the United States. This belief was based upon accounts, somewhat vague it is true, but all concurring in substance, and was universally entertained by the Spaniards of that day. The sea expedition on the Pacific, undertaken by Ulloa in 1539, under the direction of Cortez, had for its object not less the discovery of the golden region of the north than the exploration of the coast. And when, in 1540, it was resolved to send northward a land expedition upon the same search, the right of command was contested between Cortez, as Captain General of New Spain, and Mendoza, as Viceroy of Mexico. The latter was successful, and Cortez, disappointed and disgusted, returned to Spain. This incident will show how high were the anticipations which the Spaniards had formed of the riches of the Californian *El Dorado*. The documents of that period, which have been recovered from the rich historical depositories of Spain, present us with some singular illustrations of the extravagant notions then prevalent; and, although to a great extent proved by subsequent events to be unfounded, are, nevertheless, at this time not without their interest."

* The number which left the United States between December 14th and April 17th last, was, according to the Herald :

RECAPITULATION.

Total in 226 vessels, via Cape Horn.....	14,191
" 52 " " Chagres.....	3,547
" 11 " " Vera Cruz.....	698
" 11 " " Brazos.....	765
" 3 " " Corpus Christi.....	103
" 2 " " San Juan River.....	118
" 2 " " Tampico.....	87
" 1 " " Galveston.....	86
" 1 " " Lavaca.....	122
Total in 309 ".....	19,717

as the present population of the Union. There are causes at work to indicate this.

Three years ago, as if impelled by a vision of this western progress, so soon to receive the most powerful impetus, the people of the southwest and west repaired to Memphis in one great convention. We were a delegate to that body from South Carolina, and well remember the enthusiasm which was excited by the remark of her great statesman, who presided on the occasion: "In less than one generation, the West will be engaged in deliberations to extend its connections with the Pacific, as it is now with the Atlantic, and that connection will be as intimate with the one as the other. In the end, we will command the commerce of both, and this great valley become the center of the commerce of the world." Mr. Calhoun was right, though the shadows were cast more rapidly than even he could conceive. *The hour is already come!* A second great western convention is proposed, and delegates are again invited from wide-spread regions to Memphis, on the Fourth of July.* The occasion is a fitting one for the investigation and discussion we now propose.

Until the late explorations conducted by Col. Fremont, very erroneous ideas have prevailed in regard to the character of the country to the westward of the Rocky Mountains. It was customary to denounce it a hopeless, sterile waste, where the arts of civilized men could never prevail. Imperfect as the explorations have been, the most fruitful and abundant regions have been already found, with the finest climates, forests, and streams. Artificial irrigation is regarded practicable where these last have been wanting. We have the valley between the blue and far west mountains—the beautiful country of the Walla-Walla—the regions about the Columbia, from the straits of Fuca to the waters of the Umpqua—the much abused and little understood "Great Basin," where Fremont found a "rich alluvion soil"—the valleys of the Sacramento and San Joaquin—the country to the northward of the Bay of San Francisco, as well as toward Monterey—the valley of St. Joseph and to the southward of Point Conception—Monterey Bay, Los Angeles, &c., &c. "I read," says Mr. Benton, "to show that there is good country in the mountains; but I have more beautiful yet to show—the 'Three Parks,' unsurpassed by any thing in Switzerland, replete with all the beauty of the most picturesque parts of Switzerland, and without glaciers."

We believe that this whole region will eventually be one of flourishing empire. Its most unfavorable sites will not suffer in the comparison with some of the most inhospitable of *prosperous* New England. The improvements in arts has made the desert and the wilderness bloom. As yet, imagination cannot even picture the treasures in gold and precious stones which are concealed among the mountains and through the beds of rivers. These must necessarily attract a large population, and build up villages and great cities. With a command of

* We have the circular of the committee on correspondence before us, and an able paper by the same gentlemen in pamphlet form, containing a most interesting letter from Lieut. Maury to Mr. T. Butler King. We hope to attend the convention, and take part in its proceedings.

the precious metals, the inhabitants may have the command of commerce. The East is before them, at their very doors; that East which has furnished rich products from all antiquity, and held out golden visions of unlimited trade to all civilized nations; the East which built up Alexandria—which caused Venice to spring from the marshes of the Adriatic, and the “abodes of fishermen” to rival in splendor, pomp and magnificence, all the world had hitherto seen; the East that enriched the Portuguese, enabled the Dutch to compete for the sovereignty of the seas, and gave at last to their great rival across the channel, as it were, the very trident of Neptune himself. There is no fancy in this. Western America may have her high destiny too; and we, and all the world else, may seek to share it with her, by opening channels of frequent intercourse and communication.

Neither California nor Oregon are more distant from the seats of eastern commerce on the Pacific, than is Europe from our Atlantic coasts, yet already have we an annual commerce with Europe of about two hundred and fifty millions of dollars. Is not Western America, in the progress of her history, capable of a similar trade by the Pacific? Her ports and harbors, Fuca, San Francisco, Monterey, San Diego, if not all that could be desired, are at least sufficient.

Western America can compete with Europe in the eastern trade, being several months nearer—all experience showing that the amount of trade increases generally in a ratio with the facilities and rapidity of intercourse. She can compete with Eastern America in this same trade for a similar reason. Admitting a dense and enterprising population beyond the mountains, these propositions cannot be disputed. The great question, however, occurs, and this will determine the whole matter, *can Western America herself be brought into connection with the Atlantic, and thus with Europe, so as to enable her to trade with the world in India products, on such terms as will secure the monopoly?* At present she has no such connection, but is isolated and alone, and must resort to the seas upon less advantage than Eastern Asia. Shall she ever remain so?

Let us see what has been proposed since the earliest periods, to connect the shores and commerce of the American continent, and whether any plan is practicable, and which? The time has come to settle this question. But first it is well to determine what Eastern America has to gain in the event of success, or in other and plainer language—*what is the value of eastern commerce?**

When Venice conducted the commerce of the East she supplied all the world with its products. The disadvantages of this trade were great, land carriage as well as sea, and various shipments and reshipments, yet the richness of the trade endured them all, and made her “Queen of cities—a new Tyre.” The Byzantians had long before conducted the same trade, by voyages up the Indus, overland communi-

* Mr. T. Butler King, in his able report upon the Panam railroad, adverts to one great cause of British commercial supremacy, that “she not only has the ports of the continent of Europe as her neighbors, but she is *fifteen hundred miles*, or two weeks, nearer than we are to *all the other ports of the world, except the Atlantic ports of the American continent north of the equator and the West*

cations to Oxus and down to the Caspian Sea, navigation to the Volga, transportation again across the country to the Tanais, thence to the Euxine, with a reshipment there. Precious indeed must be the trade which can flourish amid all these obstacles!

As facilities of intercourse with the East, however, increased after the discoveries of the Portuguese, Spanish, Dutch and English, we find the European trade with Asia prodigiously augmented. In the best days of Venice (A. D. 1400) this trade did not exceed 20,000,000 ducats, or require above 600 ships of 600 tons each. Whereas including America now, according to a report made to Congress, by Mr. Breese, and adding for increase since his dates, and value of ships engaged, the whole commerce of the East with all the world, annually, may be estimated at 300,000,000 of dollars, requiring 2,000 ships.

Indies. He furnishes the following interesting table of distances to be saved by the Panama route.

Places.		New route from New York.	Old route from New York.	From Liverpool.
		Miles.	Miles.	Miles.
To Calcutta, via.....	Cape of Good Hope.....	17,500	16,000	
	Cape Horn.....	23,000	21,500	
	Isthmus of Panama.....	13,400		
To Canton, via.....	Cape of Good Hope.....	19,500	18,000	
	Cape Horn.....	21,500	20,000	
	Isthmus of Panama.....	10,600		
To Shanghai, via.....	Cape of Good Hope.....	20,000	18,500	
	Cape Horn.....	22,000	20,500	
	Isthmus of Panama.....	10,400		
To Valparaiso, via.....	Cape Horn.....	12,900	11,400	
	Isthmus of Panama.....	4,800		
To Callao, viz.....	Cape Horn.....	13,500	12,000	
	Isthmus of Panama.....	3,500		
To Guayaquil, via.....	Cape Horn.....	14,300	12,800	
	Isthmus of Panama.....	2,800		
To Panama, via.....	Cape Horn.....	16,000	14,500	
	Isthmus of Panama.....	2,000		
To San Blas, via.....	Cape Horn.....	17,800	16,300	
	Isthmus of Panama.....	3,800		
To Mazatlan, via.....	Cape Horn.....	18,000	16,500	
	Isthmus of Panama.....	4,000		
To San Diego, via.....	Cape Horn.....	18,500	17,000	
	Isthmus of Panama.....	4,500		
To San Francisco, via.....	Cape Horn.....	19,000	17,500	
	Isthmus of Panama.....	5,000		

TABLE I.—Statement of the number of vessels, amount of tonnage and crews, which entered and cleared at the ports of the following countries from and to ports beyond the Cape of Good Hope and the Pacific.

	INWARD.			OUTWARD.		
	Ships.	Tonnage.	Men.	Ships.	Tonnage.	Men.
England, 1842.....	877...	329,404...	16,698	823...	348,724...	18,468
United States, 1845.....	329...	111,180...	6,998	367...	125,582...	8,305
France, 1833.....	117...	36,040...	2,048	117...	36,040...	2,038
Antwerp, 1839.....	7...	2,860...	125	1...	272...	12
Bremen, 1841.....	6...	1,800...	100			
Hamburg, 1841.....	10...	5,000...	200	10...	5,000...	200
Netherlands, 1840.....	188...	97,231...	5,150	221...	113,862...	5,625
Russia with China, estimated from the commerce now overland, to require	50...	25,000...	1,000	50...	25,000...	1,000
Total.....	1,584	608,515	32,319	1,589	654,480	35,648

TABLE II.—Value of trade conducted by above shipping.

	IMPORTS.	EXPORTS.
Great Britain.....	\$85,527,120....	59,187,185
France.....	16,310,295....	8,238,050
Antwerp, no statistics but estimated on number of ships	700,000....	500,000
Hamburg, " " " "	500,000....	400,000
Bremen, " " " "	610,000....	400,000
The Netherlands.....	23,527,390....	4,702,000
United States.....	11,438,403....	5,443,828
United States, from whale fishery, for 1845:		
157,700 bbls. sperm oil @ 88.....	\$4,371,444	8,300,957
272,809 " whale oil @ 33½.....	2,864,495	
3,195,054 lbs. bone @ 33½.....	1,065,018	
	146,814,165....	78,871,063
Add overland Russia with China.....	12,048,055....	7,581,295
Total.....	\$158,862,220....	86,452,358

The number of vessels employed in trade beyond the Cape of Good Hope is estimated at 2,000, of the value \$60,000,000. Passengers to and from Bombay and England annually, about 4,000, paying from 5 to 900 dollars each, and occupying 40 to 50 days.* Extra baggage \$15 per hundred pounds. English mails to Bombay and China \$2,000,000, making \$4,000,000 expended annually in passengers and mail to the East.

Now there can be little doubt that the trade with eastern countries is susceptible of almost unlimited extension, were their distance lessened one-half, or two-thirds, and the time of travel reduced in a similar proportion. Many new products would then endure transportation which are now too perishable or bulky. The travel also would be increased. In truth there would be added millions and hundreds of millions of eastern consumers. The Sandwich Islands are but in their infancy. There are a million and one-half Polynesian Islanders; Celebs contains 3 millions; and Java 5 or 6 millions, who export \$30,000,000 annually to Holland. Sumatra, with a population of 2,000,000, exports 30,000,000 pounds spices. Borneo, with 3 to 4 millions, exports gold,

* This of course is by the overland route by Gibraltar, Alexandria, Cairo Suez, the Red Sea, etc. In a late number of *Chambers's Miscellany* is described the route, 39 or 40 days, and the expense £120, \$600, from Southampton to Bombay.

tin, antimony, and diamonds. The Phillipines, have 3,500,000, producing sugar, coffee, indigo, hemp. Singapore is the center of Indian trade; India contains 184,000,000 inhabitants, including Cabul and Affghanistan, Calcutta, Bombay, Madras, Ceylon, etc., with a commerce of \$150,000,000 annually. Australia is an infant, but promising, colony. Russian America, now unimportant, Manchoo Tartary, and the great Sanghalin river, 4,000 miles long, connecting with Pekin; Japan, with 50,000,000 people and the richest products, now almost closed to commerce; China, 360,000,000 inhabitants, on the coast 274,000,000, with its Chang-hee, or Shang-hai, at the mouth of the mighty Yangtsee-keang, 4,000 miles long, the Mississippi of China.

Can it be imagined that these vast regions, so densely populated, have already reached the acme of their foreign trade, or is it not plausible, when better systems of intercourse are opened, jealousies removed, and civilization extended, that trade with them will be augmented two or three fold, reaching, perhaps, in the aggregate, five to eight millions of dollars? Instead of two thousand travelers visiting the East, per annum, in such a contingency, would not the number reach nearer twenty thousand, which, at half the present rates of travel, would realize six or eight millions of dollars?

The question occurs again, how can we connect ourselves with the Pacific by a route so advantageous, in every respect, as will enable us to command, if not to monopolize, its commerce, and augment it in the manner indicated? And this brings us to a *historical consideration of the various projects, past and present, looking to a connection between the Atlantic and Pacific oceans.*

In the search of a western and shorter passage to India, Columbus discovered the American continent, as the Portuguese had skirted along Africa and doubled the Cape for an eastern passage. The Portuguese rested in their brilliant discoveries, and in the wealth which they brought. Spain, on the contrary, still sought the nearer route, and explored the American continent, in the hope of finding some strait or channel through it to India. She sought in vain in the extreme North; about the Isthmus of Panama; along the Mexican coasts, and throughout the extent of all South America; finding, however, the Straits of Magellen, and ultimately, though long afterward, Cape Horn. These were far from presenting the much desired advantage.

No sooner had Cortez been securely established in Mexico, than he commenced anew the search, with the greatest minuteness, throughout all the coast. He wrote to the Emperor: "I have received information as well of the riches of the country, as that, in the opinion of many navigators, *there exists a strait leading to the opposite sea.*" He writes again: "Should we, with the Divine assistance, so hit upon this strait, that the navigation from the spice countries (the East Indies) to the kingdom of your Majesty would become excellent and shorter, so much so *that it would be two-thirds less than the present navigation*, and without any danger to the ships in going or coming," etc., etc.

The Spaniards appeared, at last, satisfied in this quarter, and sent out expeditions to north-west of America, in the hope of greater success there. In one of these was explored the Gulf of California, and in another Friar Marcos asserted the discovery of regions, which no

one afterward could find, northwest of Mexico, beyond 35° of latitude, abounding in gold, silver, precious stones, and a civilized population!*

The final conclusion was, that no navigable passage existed South of the latitude of 40° , and soon, says Mr. Greenhow, the Spanish policy maintained, "the discovery of any passage, facilitating the entrance of European vessels into the Pacific, would be deleterious to the power and interest of Spain in the New World."†

About the middle of the sixteenth century, a direct commerce was opened between the Spanish East India possessions and Mexico. For the first time Europeans crossed the Pacific in direct voyages from Asia to America. "Large ships, called galleons, sailed annually from Acapulco to Manilla in the Phillipines, and to Macao and China, laden with precious metals and European merchandize; in return for which they brought back silks, spices and porcelain, for consumption in America, or for transportation over the Atlantic to Europe; while an extensive trade, in articles equally valuable, was carried on between Panama and the various ports of Peru and Chili."

The English now appear upon the theater; and, jealous of the lucrative branch of commerce which has sprung up, the buccaniers, under Drake and Cavendish, infest the waters of the western world. To this period may be traced the ingenious fictions of a passage in the northwest, *through the continent*, so long credited and known, even upon the maps, as the *Straits of Anian*, or of *Fuca*.

Between the years 1600 and 1760 the search was continued, with various interest, and resulted in the discovery of Baffin's Bay and Hudson's Straits. Near the close of the eighteenth century, the English, Spanish and American navigators made frequent expeditions to the northwest, and their respective discoveries became a question of keen and lively interest and discussion but lately, in the settlement of the *vexata questio* of Oregon. The English chapter exhibits the results of Alexander McKensie, one of her citizens, who traversed British America, from Canada to the Pacific, being in search of an inland route across the continent.

The Sieur de la Salle entertained the idea, as his dispatches will show, that, by following the Mississippi to its sources, a communication could be had with the waters of the Oregon and the Pacific, and the commerce of the East commanded by France, through her province of Louisiana.‡

Thomas Jefferson, two hundred years later, and soon after the Louisiana purchase, following the idea of La Salle, dispatched Lewis and Clarke on an expedition to the northwest, by the way of the Mississippi, to find, if possible, *a route of commercial communication* to the Pacific.§

So much, then, for the history of this interesting subject, and now for the various projects of our own day, toward the accomplishment of the same great end. They are either,

I. By CANAL, or

II. By RAILROAD.

* Was this California?

‡ Vid. Spark's La Salle.

† Hist. Oregon and California, p. 65.

§ Lewis and Clarke's Expedition, vol. 1.

Of each there are several routes proposed, with various degrees of merit, which it is our present purpose to examine. And first, as to canals. These are,

1. By the Isthmus of Panama, or Darien.
2. By the Lake of Nicaragua.
3. By the River Atrato, from the Gulf of Darien.
4. By the Isthmus of Tehuantepec.

Others, less practicable, were proposed by Humboldt, but we shall consider now only those of Panama, Nicaragua, and Tehuantepec.

1. **PANAMA.** This is the narrow neck of land connecting the two Americas; in the province of New Grenada; between the parallels of 8° and 11° north latitude; varying in breadth from twenty-eight to forty-eight miles, and with a population of 7,200. The Andes afford many gaps, or passages, and the country presents no insurmountable obstacles to a canal, which it is estimated may be built for \$40,000,000. The late conquest of California has given an interest to Panama, far greater than it has previously had. Lines of steamers constantly ply from northern ports to Chagres, on the Atlantic, and other lines from Panama, on the Pacific, to San Francisco and Oregon. Little difficulty is found by passengers over the isthmus, who are conveyed more than half the way in canoes. We have seen the most glowing accounts of the expedition, the scenery and aspect of the country, even from the pens of delicate females. The rigors of the climate and the rainy season have been greatly exaggerated.

2. **NICARAGUA.** This lake is situated between 11° and 12° north latitude; its extent is large, and its navigable waters are carried to the Caribbean sea by the river San Juan—navigable during the rains, according to McCulloch, throughout its whole extent. Four to twelve feet water is always afforded in the Rio Juan, and it is proposed to improve its navigation, or to construct a canal from the Lake Nicaragua, which is adapted to ships of largest burthen, to the Pacific, fifteen and three-fourths miles, through a country elevated, in general, not more than nineteen feet. The level of the lake is one hundred and thirty-four feet above the Pacific, and the difference in level between the two oceans is twenty or twenty-two feet. For a canal, there must be one mile of tunnel, and two miles of deep cutting through volcanic rock, and also a great number of locks. Mr. Bailey, under direction of the State of Nicaragua, made a survey in 1837-8, and estimated the cost of a canal at about \$30,000,000.

3. **TEHUANTEPEC.** The Rio Guascecualco has its mouth in the Mexican province of Vera Cruz, seven hundred miles from the mouth of the Mississippi river. The route across the Isthmus follows the course of the river as far as Tarifa, at which town a canal or rail-road will begin, passing into the western lakes which are discharged into the Pacific. The width of the Isthmus in this part is one hundred and thirty-five miles, and its central mountainous chain exhibits a depression in the line of the route. For twenty-five miles a plain is formed, whose streams flow North and South. There are passes or gates here, such as Chivola and Tarifa. The northward streams enter the Guascecualco—the southern, the Chiapa, which is discharged in the lake east of Tehuantepec, on the Pacific. We have before us the survey and charts

of Moro, appointed, in 1832, surveyor under Garay, who had obtained the right of way from Mexico, for fifty years, and the property in all the lands for thirty miles on either side—the passage to be opened to all nations, and considered *neutral* ground. The Spanish engineer conceives the whole extent of the Guascecualco may be rendered navigable by artificial means, and without exorbitant cost. He proposes also to remove the bar on the Pacific entrance, and estimates the whole expense of the canal 85,000,000 francs—less than \$20,000,000. We have prepared the following map from the charts of Moro:



The late Vice President, Geo. M. Dallas, strongly advocated the Tehuantepec route, in an able and elaborate paper, and suggested the importance of a clause in the treaty of peace with Mexico, securing to us forever the right of way. The Mexicans, it is understood, would not listen to this; though it is likely, as they can never hope to make the improvement themselves, they would, upon some more suitable occasion, readily make the concession.

In regard to the canal communication it is difficult to pronounce an opinion. The Americans would never undertake it, we think, unless—which is hardly to be expected, at least for half a century—the territories were ours, or unless an overland communication across our present

possessions were found impracticable. Would the British? And this, too, must depend upon the chances of our railroad, as above hinted at. If that succeeds, of course the Isthmus canal would be unnecessary, and we opine that one would require as long to build as the other. But this is anticipating. When the American continent becomes as densely populous as Europe, these, and many other connections, may all be in successful operation together.

Let us now pass to the various projected railroad routes across the continent. They are—

1. Across Panama—the Aspinwalls.
2. Across Tehuantepec—Mr. Hargous.
3. Tampico to Mazatlan.
4. Natchez to Mazatlan—Mr. Patterson's.
5. Galveston to San Diego—Gen. Houston.
6. St. Louis to San Francisco—Mr. Benton's.*
7. Lake Michigan to Oregon and San Francisco—Mr. Whitney.
8. Memphis to San Diego, Monterey, or San Francisco.

Of these, the first four are either wholly, or in part, through *foreign* territory and the remainder entirely through our own. We take them in order.

1. PANAMA RAILROAD. At the last session of Congress considerable excitement prevailed in regard to the proposition of Mr. Aspinwall and others to construct this road, on consideration of a contract from Government, to carry the mails, troops and government stores, for ten years, at \$250,000 per annum. The road to be guaranteed complete in three years, and to charge Americans no more than \$3 each, for passage, and \$8 per ton, freight. These rates to be reduced after the first five years to \$5 each, and three-fourths of the road to be owned by citizens of the United States.

Able speeches were made in the Senate, by Messrs. Benton, Douglass, Clayton, Webster and Dayton, in advocacy of the scheme, and by Downs, Niles, Allen, Butler, Davis and Foote, in opposition. We give some extracts from the debate, as possessing great interest.

Mr. Benton said:

"It is therefore a temporary road for us—not temporary for other nations—but for us it is a temporary road across the Isthmus of Panama, as a step toward the accomplishment of this great design which Mr. Jefferson conceived, and for the accomplishment of which I have been collecting information and studying details for thirty years; and I intend at a proper time to bring in a bill, with those details, for commencing the location and construction of the road. With this explanation of my views of the projected route across the isthmus of Panama, that we are to use as a temporary route, it will be seen that the first thing we have got to do is to go about it at once—to do it immediately, or the whole object is lost. I am for no permanent road outside of my country. I am for no permanent road for America, either across the isthmus of Darien, Tehuantepec, or anywhere else. I am only for a temporary measure, with respect to any route, sir; but I take that one which can be got first, and which will answer our purposes better than any

* A memorial was presented, at last Congress, to carry the mail between these two points by express, on the part of W. A. Bradley, and others, and reported on by Mr. Bell and Senator Rusk.

We read, also, in the Railroad Journal, the memorial to Congress, of Bayard, praying aid in constructing a railroad from St. Louis, intersecting the Rio Grande, Red and Gila rivers; and one from Dennis Keenan, Jr., proposing a railroad and magnetic telegraph, from Point Isabel, Texas, to the Pacific. Truly is this an age of enterprise.

other. If we undertake to institute comparisons between different routes, even if we have a legal and political right to do so, why, sir, the very object for which I want a road outside of our own country is lost. I want it, sir, directly. I want it for present use; and if we have to wait, why, sir, we may as well throw up the whole, and wait for our own. I have no idea, sir, of doing anything permanent outside of our country—no idea of going into expenses, or bargains, or arrangements, which are to keep me outside of my own country one moment beyond the time that we are able to finish our road."

Mr. Webster said:

"I have a strong disposition to think the measure is a proper one. The extraordinary circumstances of the country call for it. There is nothing in those circumstances likely to make them so short-lived and temporary, as that within a year or two, or any number of years, we may justly apprehend and consider that this work will not be necessary; and I repeat again, that if there were a proposition at the same time for the other work, if it were in as advanced a state as this, and we were to have but one, I should give the preference to the other; and I fully believe both are to be accomplished, and still other modes of communication are to be established across our own territory, without any occasion to enter the territories of other countries."

Mr. Clayton said:

"This is to be an American road. It will have that character abroad, do what you may. American citizens are entrusted with the construction of it. Well, if this work is to be, and be called an American work, I desire that it should be a road worthy of the American name; and in my opinion the American government should, within its constitutional sphere, aid, as far as it can, individual enterprise in making a road worthy of the American character. I do not want a road attempted there by individuals and carried on by piecemeal, commencing with a railroad of a few miles, and perhaps ending for some years to come with a plank or a mule road. I desire that the improvement should go on continuously and in the shortest practical time. And now allow me one general remark in regard to the sum to be expended. I would aid, as far as the constitutional power of the government will enable us to do it, in making a road from the Mississippi river to the Pacific, or a road across the isthmus of Tehuantepec, as I design to aid in the construction of the road proposed by this bill; and whatever the cost of a passage by canal or railroad across to the Pacific on either isthmus may be, whether two millions, two and a half millions, six millions, twenty millions, or even fifty millions, I say, sir, that the wit of man cannot find any other mode of expending the same amount of money as much for the benefit of this country and of the whole human family. And I repeat that I do think that, in the middle of the nineteenth century, it is a disgrace to the government that nothing has yet been attempted with success to save our commerce the dangerous navigation of nine thousand miles around the cape. I take the proposition now before us because it is practicable. I would not delay the work from year to year and from day to day. If we can, by expending the sum of two and a half millions of dollars, or less, accomplish so great an object, I say for one that I am willing to authorize the expenditure."

The objections to the bill were strongly urged—that it was a contribution *indirectly* for internal improvements; that the monopoly would be in violation of the treaty with Grenada, making the passage *free*; that the amount to be paid by government would itself build the road; that the consideration offered by the company was inadequate; that it would be unfortunate for the government to be bound down so long a time to a route far beyond our own country; that the steamers to Chagres must enter the Carribean, an enemy's sea, perhaps, and have their coal depots at Jamaica; that it is far less desirable, and not more practicable, than the Tehuantepec route, etc., etc.*

* It was understood that this was a mere question of time, and the Aspinwalls would build the road in ten years, whether they had the government contract, or not.

Mr. Underwood said:

"Now, sir I have given you these speculations and these data, and if there be any thing in them at all, it is very manifest that it is to be the most profitable route for the investment of capital on the face of the earth. There is to be nothing like it. It is to transcend every other railroad that has been constructed. And what, then, are you doing. It is a contribution on the part of the government—a departure from all the principles of the constitution—to make millionaires of the members of this company. That, sir, is your bill. I believe it was suggested that it was an extra-territorial improvement. So much the worse for me; so much the better for my argument, but worse for my feelings. I want to improve my own country. I want to make a railroad—one or two, if you please—across the valley of the Mississippi to the Pacific; but I want it in our own country, if I can get it. I will not object to this, if you will place it on a basis by which I can see that we get an equivalent for the money which we pay; but I will not give a cent—I am too democratic for that—by way of exclusive privileges to a favored few. With the views I have taken of this matter, based on the figures which I have read, and looking at what the government will give under this act, and what individuals must pay, it must be the most profitable investment on the face of the earth. To this bill, then, sir, I am altogether opposed. I am further opposed to it, because we have not the data upon which to act, and because I believe that this thing has taken a step which it should not have taken."

2. TEHUANTEPEC RAILROAD. This was a proposition of Mr. Har-
gous, of New York, who has a grant for fifty years from Mexico to
build the road—that Republic to impose no taxes upon travelers or im-
posts, to allow foreigners to acquire real estate and exercise all trades,
except mining, for fifty leagues on either side of the road. But we
adopt the words of the memorial:

"From these surveys it is established that the entire distance from sea to sea is one hundred and thirty-five miles, in a straight line, and presents a wide plain from the mouth of the Guasacualco to the port of the Meza de Tarifa, a table or elevated plain on the line of the Andes, which rises to the height of six hundred and fifty feet above the level of the sea, and at the distance of five miles again descends to a plain which reaches the Pacific. The summit level to be overcome is only six hundred and fifty feet. Thirty miles of the river Coatzacoalcos are navigable for ships of the largest class, and fifteen miles beyond this for vessels of light draught, leaving only about one hundred and fifteen miles of railroad to be made. It would occupy too much space to enumerate all the details of these surveys, and which go to show so strongly how easily a railroad can be constructed across the Isthmus of Tehuantepec. It is sufficient to say that the absolute practicability has been clearly ascertained."

"In other respects it affords great facilities for construction. 'The entire course of the Guasacualco is bounded by forests, which can supply immense quantities of the proper kind of timber suitable for the construction of a railroad, and all of which is, by the terms of the grant, the property of the company undertaking the construction of the road. Limestone, strong clay, asphaltum, and building stone of the best quality, suitable for bridges where necessary, are placed as if purposely by Nature, all along the direction of this route. The Zapotecos and other Indians can be found in quite sufficient numbers to carry on the work, and at those points where foreign labor is indispensable, the temperature is such as to allow them to pursue their labor without either inconvenience or injury to their health. The climate, though warm, is healthy. The natives are mild, submissive, and tractable. There are ample sources whence to obtain a stock of domestic animals and beasts of burden. Throughout the whole line secured by the grant, as well for the purposes of a communication across the isthmus as for the settlement of the country by foreigners, all the productions of the equatorial and temperate regions are found in the greatest abundance;' for the valley of the isthmus produces the former, and on ascending to the more elevated country bordering on the valley, the climate of the temperate zone is found there, as well as its productions. At each end of the railroad are suitable places for fine harbors, as well as to depth, size, and security from storms. It is true, there is a bar at the mouth of the Guasacualco. By different navigators the water has been sounded

and from twelve to eighteen feet have been found on it at low water. Commodore Perry, in his survey in 1847, found twelve feet. At a small pass at the entrance of the ocean, on the Pacific side, there is at low water seven feet. Your petitioner, however, is convinced, from the character of the obstructions, that they can, at a small expense of time and money, be removed easily, and will then open an entrance for vessels of large size into ports equal to any in the world. He is prepared to show this to the satisfaction of your honorable body.

"Such are some of the physical advantages connected with this route. There are others, however, no less important. The distance from the mouth of the Mississippi to San Francisco by the Isthmus of Tehuantepec is 3,294 miles, by the Isthmus of Panama 5,000—thus showing that the route by the Isthmus of Tehuantepec is 1,706 miles shorter than by Panama. The distance from New York by the Isthmus of Tehuantepec is 4,744 miles, by the Isthmus of Panama 5,858—making the route by Tehuantepec from New York to San Francisco 1,104 miles shorter than by the Isthmus of Panama."

Mr. Foote offered the following remarks and table:

"From New York to Chagres and the mouth of the Guascecualco river, the distance will be about the same for steam vessels; but that for sail vessels, the route to Chagres is much the longest, as a vessel might have to go outside of Cuba, St. Domingo, and Jamaica, in order to get into the current controlled by the trade winds; that the Panama route strikes the Pacific ocean some twelve hundred miles (more or less) more distant from California than the terminus on the Pacific of the Tehuantepec route; that the Tehuantepec route passes through a healthy country, whilst the Panama route traverses a region confessedly more sickly than any in North America besides; that from New Orleans it is 650 miles further to Chagres, than to Guascecualco; that the marine route to the eastern terminus of the Tehuantepec route is altogether in the Gulf of Mexico, whereas the Chagres route is outside of all the West India islands (a highly important consideration in time of war); that the soundings on the bar at Guascecualco are, according to the highest authority, at most seasons of the year, from 18 to 20 feet, and never lower than 12 feet 3 inches, with a tide of two feet; that distinguished English engineers have reported that \$3,000,000 will be necessary to make a safe and convenient port at Tamon bay; that at Panama, vessels cannot approach nearer than three miles, and a pier will have to be constructed about that distance; whereas, at Boca Barra, where the Tehuantepec route is to terminate on the Pacific, there is a fine port; and, finally, that the following table (which I request to be read) may be fully relied on in all respects:

Voyage.	Distance in nautical miles.	Distance via the Isthmus of Tehuantepec.	Difference saved.
New York to Boca Barra, round Cape Horn, crossing the line in long. 26° W., Rio Janeiro, Valparaiso, Callao and Boca Barra,.....	12,390	3,330	9,060
New York to Canton, by the Atlantic and Indian oceans, crossing the line in long. 26° W., going to lat 41° S., and eastward to long. of St Paul's, and thence by the straits of Sunda,.....	15,540	11,950	3,590
New Orleans to Boca Barra, round Cape Horn, to St. Thomas, Rio Janeiro, Valparaiso, Callao and Boca Barra,.....	12,510	900	11,610
New Orleans to Columbia river, round Cape Horn,.....	14,830	3,220	11,610
New Orleans to Columbia river, inland journey, up the Mississippi, up the Missouri, and across the Rocky Mountains,.....	3,400	3,220	180
[Note.—This has a land journey of 900 miles, full of difficulties.]			
New York to the Columbia river,.....	.....	5,650	

Mr. Dayton, in opposition to the road, read a letter from Col. Abert, of the Topographical Engineers, and from Lieutenant Maury. We extract first from Col. Abert:

"It is supposed that the railroad of this route will pass through Chevela as its summit pass, about 700 feet above the ocean on either side. The communication with the Pacific on the southern side is by means of two small lakes, called the Upper and Lower lake. The railroad landing will, probably, be on the Upper lake, and the developed length of the road from the landing to Chevela will not, I think, be less than thirty-five miles. The northern terminus of the road, at a point where the navigation of the Gulf of Mexico ceases, will be at the lower end of Tacamichapa island, an island of the Guascecualco river. A straight or air line cannot be taken as a line for the length of the road, which must of necessity deviate from such a line and occupy the valley of the principal streams.

"From information derived from those much interested in this route, I am induced to believe that a railroad can be located between Chevela and the point on the Guascecualco before designated of not less than 120 miles. This would make the whole road 155 miles long.

"From the surveys of our navy, when on duty in the Gulf during the late war, twelve feet water was found over the Guascecualco bar, and it is also said that at times this depth is increased to fourteen feet.

"During the season of northers, it is represented as a dangerous, if not impassable bar, rarely approached during that season, as the adjacent coast affords no adequate shelter. The harbor on the Gulf side is the Guascecualco river, a safe and good harbor after the bar is passed.

"The harbor on the Pacific side is the lakes or lagoons before described; for Tehuantepec bay is an open roadstead, without protection or shelter of any kind, and this bay is represented as being liable to frequent and violent tempests. The entrance to these lagoons is through a narrow passage between the lower lagoon and the Pacific, called the Boca Barra. It cannot be made by sailing-vessels with an adverse wind, nor by steamers, under such circumstances, without great difficulty and danger. The inside of Boca Barra is closed by a bar, over which not more than eight feet of water has been found.

"This route being 155 miles (of railroad), if it be supposed to cost as much as the Panama route (and I do not see how it can cost less), the total cost will be \$12,913,900.

The total length of the Tehuantepec route can be stated as follows:

155 miles of railroad.

15 of water, through the two lakes to the Pacific.

30 (about) of river navigation, from the foot of Tacamichapa island to the Gulf of Mexico.

200 miles.

Lieut. Maury remarks,

There is now in the course of publication at this office a chart of the mouth and bar of the Guascecualco, from a very accurate survey made by Lt. Leigh, by order of Commodore Perry, in 1848. It appears by that, that there is not more than 12½ feet water on the bar at the mouth of that river.

I would here remark that there is in this office also a manuscript copy of Cayetano Moro's survey of the Isthmus of Tehuantepec, under the Garay grant. The original, from which this copy was taken, was found by Commander Mackenzie at Mina-titlan in 1847, in possession of one of the assistants on that survey, and the copy here was made by Lt. May, by order of Commodore Perry.

The surveys by our own officers differ so widely and in such essential particulars from the Moro Survey, that they discredit it in some of its most important features, and show it to be unworthy of confidence.

Lt. Leigh's soundings I know to be correct. His chart was constructed in this office with a great deal of care, and his note-books are here on file for reference. Lt. Leigh makes but 12½ feet on the bar, Cayetano Moro 6.2 metres, or 20½ feet English.

Thinking there might be some mistake in the matter, which Commodore Perry could explain, I referred the Moro survey to him, and called his attention to this discrepancy as to the depth of water on the bar—a vital feature in the advantages of the route. By letter of the 25th ultimo he replies with regard to the Moro map: "I notice on a side sketch of the bar the shoalest water marked at 6.2

metres. This is certainly wrong, as I have crossed the bar several times myself, sounding both ways, and the average depth in the channel has not exceeded 124 feet. With regard to the depth of water on the Pacific side, it is not more, however, than six or eight feet. I do not find the Boca Barra recognized by any chart or book as a harbor or port into which vessels may enter. Ventoza is an open roadstead about twenty miles west of Boca Barra; it is without shelter, and vessels are driven out to sea by every gale at a moment's warning.

The following table shows the shortest navigable route in nautical miles, upon arcs of great circles, from New York to the mouth of the Guascecualco and Navy Bay, also from New Orleans to the same places.

	Guascecualco.	Navy Bay.*
New York, via Hole in the Wall, - -	1,800	
do south side Cuba, - -	2,870	1,930
New Orleans, - -	800	1,450

On account of winds and currents, the average time under canvass, from New York, is rather less to Navy Bay than to Guascecualco by either route.

3. TAMPICO AND MAZATLAN RAIL ROAD. We have merely seen this suggested, and believe no survey has been made. The distance would not exceed seven hundred miles. Mexico, it is not likely, will ever have the means of constructing such a road across her territories. A far better road is, however, proposed by the Mexicans, from Vera Cruz to Acapulco, passing through Jalapa, Cordova, Puebla, Cuernavaca and Mexico; the entire mule route being, according to the common itineraries, from Vera Cruz to Mexico, 252 miles, from Mexico to Acapulco, 270 miles—in all, 522 miles. A greater difficulty than the length, however, is the immense height which has to be ascended and descended in the passage between the two seas. Mexico is a vast mountain ridge, or plateau, wide at the north, narrowing rapidly at the south, but still preserving throughout its general height, which averages between seven and eight thousand feet, or about one mile and a half in perpendicular altitude. The city of Mexico itself, is no less than some seven thousand six hundred feet above the sea. Nor is this the worst; for from this mountain ridge rise the minor ridges, or chains of mountains, half as high again almost, which require to be climbed. Thus, between the valley of Mexico and the Gulf, is the ridge of Rio Frio, upwards of ten thousand feet high; and on the west, that of El Marques, of about the same altitude. Doubtless, lower depressions in these ridges might be found; but no engineer would think lightly of the task of locating a working railroad, free from planes and tunnels through mountains of solid porphyry, over such a country as central Mexico.†

4. NATCHEZ AND MAZATLAN RAILROAD. This route has been advocated by Mr. Patterson, of Louisiana, Col. Gadsden of South Carolina, and Professor Forshay. In his report to the South Carolina Railroad Company, in 1846, Col. Gadsden says: "In connection with their Atlantic communications with Vicksburg, Grand Gulf and Natchez, crossing the Mississippi at one or all of these points, roads are already projected looking further to the west, which, uniting on a common trunk, in the rapid progress of south-western extension and emigration, will in time be made to course through the new acquired territory of Texas, and by the Mexican provinces, to a terminus at Mazatlan in the Bay of Califor-

* Near the Isthmus of Darien and forty-four miles from Panama, by sea.

† New York Courier and Enquirer.

nia; or, taking a more northern direction, by the valley of the Red and Arkansas rivers, may easily pass by the southern gorges in the Stony Mountains, and find, in the course of events, certain though slow, a more imposing location in the Bay of San Francisco on the Pacific." Col. Gadsden published at the same time a map of the route.

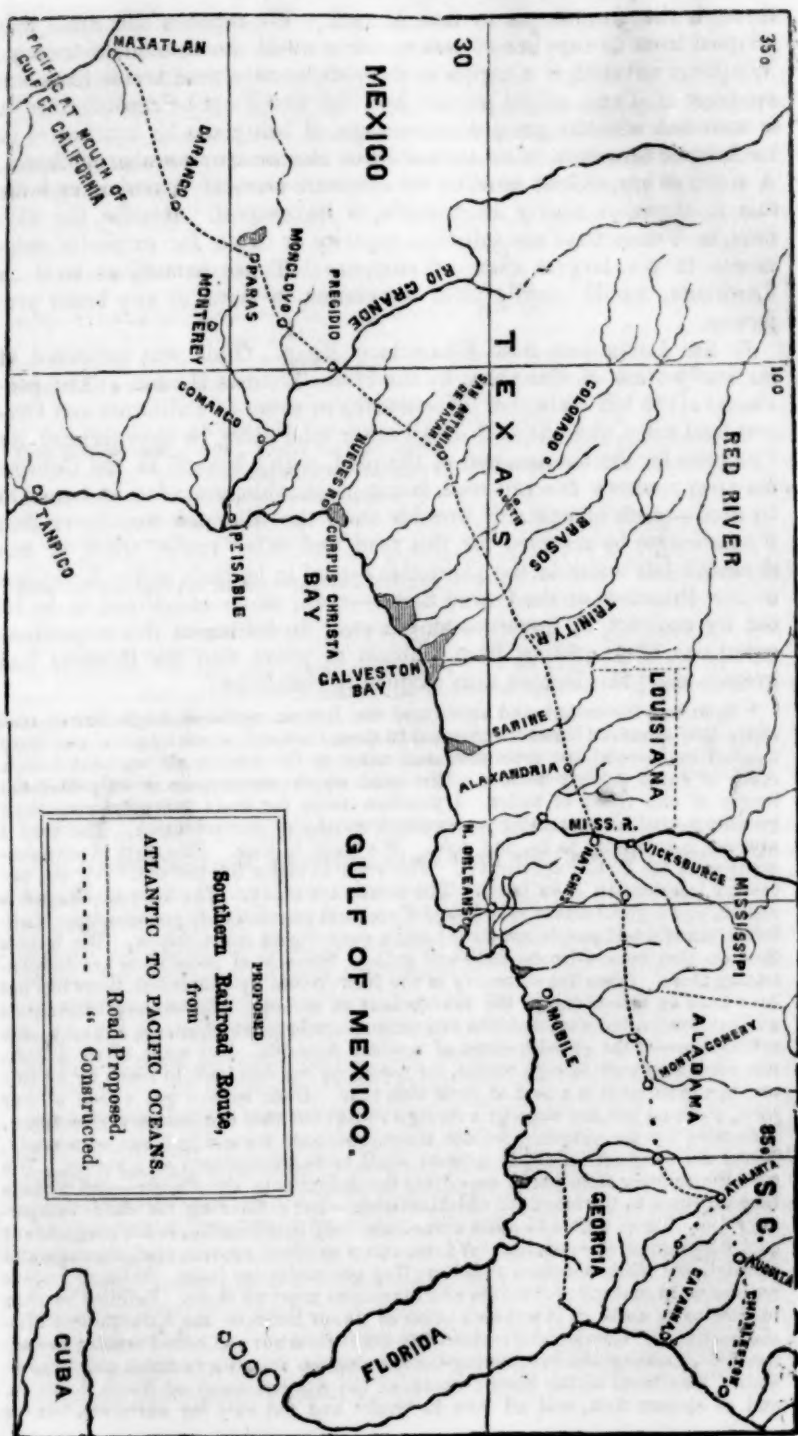
In July, 1848, Mr. Forshay published in our Review a paper upon this railroad and a map, entering into many interesting particulars and details. The distances and expense he assumes as follows:

Natchez to Trinity,	26 miles.	Level.
Trinity to Alexandria	54 "	Level—one grade twenty feet per mile.
Alexandria to Cotile	20 "	Level without obstacle.
Cotile to Sabine	50 "	Undulating, some hills and rocks—170 miles, \$1,500,000 cost.
Sabine to San Antonio	400 "	Undulating gently.
Antonio to Rio Grande	150 "	" " —550 miles, \$5,500,000.
Rio Grande to Mountains	100 "	One hill, not steep.
Mountains to Hot Springs	20 "	Hilly between Mountains.
Hot Springs to Monclova	50 "	Hills, but no rocks—170 miles, \$2,200,000.
Monclova to Bazan	30 "	Between mountains.
Bazan to La Joya	14 "	Calcareous, dusty roads.
La Joya to Veneditto	34 "	Same—no water—easy pass, &c.
Veneditto to Sanceda	22 "	Barren—Sanceda, finely cultivated road between mountains.
Sanceda to Jarrol	16 "	Road rough and broken, no mountains—cultivated valley.
Jarrol to Pastora	16 "	Dry, barren, but not rugged.
Pastora to Tenaga	8 "	
Tenaga to Cienaga	20 "	Rough and difficult.
Cienaga to Obaya	18 "	Splendid valley.
Obaya to Parras	5 "	" " —181 miles, \$2,800,000 cost.
Parras to Durango	220 "	Table lands.
Durango to Rosario River	70 "	Mountainous.
Rosario to Mazatlan	130 "	Along the river.—420 miles, \$10,000,000 cost.
Grand total, 1491 miles, \$22,000,000 cost.		

We insert a map of this route as furnished by Mr. Forshay.

In dismissing these roads through *Mexican* territory, we may be allowed to express our strong preference for that by the way of Natchez, through Texas. New Orleans and the south-west would be greatly benefited by its construction. Our preferences, however, will readily yield, if some other point on the Mississippi, not greatly more distant, and passing *altogether* through *our own* territories, can be suggested. We are sure the enlightenment of the south-west will understand and act upon this principle when they assemble in convention.

5. GALVESTON AND SAN DIEGO RAILROAD. We believe this is advocated by Gen. Houston, and was proposed by a public meeting in Texas. The route runs from Galveston Bay north-west, to 32° latitude; thence westward, crossing the Rio Grande above El Paso; thence along the Gila valley to the Colorado, etc. etc. Length estimated at twelve hundred miles, though, by *our* computation, it cannot fall short of fourteen hundred miles. It will be remembered that the Santa Fe expedition, in 1841, took the route from Austin across the valleys of the Colorado and the Brazos, due north to the latitude 32½, or what is called the *Cross Timbers*; thence between the valleys of the Red and the Brazos rivers, west to 101° longitude; thence north-west to the Colorado, and passing



through the Angosturas to San Miguel. We suppose this route was adopted from its supplies of water, and to avoid the Comanche Indians. Whatever advantage, it occurs to us, in distance, a road across from the sea-coast of Texas might possess, and that would not be considerable, it is attended with the great *disadvantage* of being too far southward in its Atlantic terminus, to be central or to interest any number of States. A work so stupendous must be the common work of America, and for this it ought, as nearly as possible, to be *central*. Besides, the harbors in Texas have not sufficient capacity or depth for extensive commerce in the largest class of shipping. Texas herself, as well as Louisiana, would readily yield her claims, in favor of any better projection.

6. ST. LOUIS AND SAN FRANCISCO ROAD. This was proposed, at the last session of Congress, by the Hon. Thomas Benton. The provisions of the bill were, that three-fourths in value of California and Oregon land sales, and one-half of all other land sales, be appropriated by Congress for the construction of the road, with a branch to the Columbia river; where the rail-road is not practicable, macadamized road to be used—track of one mile breadth from the Missouri frontier to San Francisco, to be reserved for this road and other roads; track of one thousand feet width to the Columbia—road to be built under directions of the President of the United States—road, when completed, to be let out by contract, by government, etc. etc. In defense of this stupendous enterprise, after quoting from Gibbon to prove that the Romans had greater ones, Mr. Benton thus eloquently concludes:

"Such was the extent and solidity of the Roman roads—a single line of road above four thousand Roman, and equal to three thousand seven hundred and forty English miles—and the four thousand cities of the empire all connected with roads of equal solidity besides. The road which we propose is only half the length of one chain of theirs. I mention them for their magnificence—their grandeur—and as presenting an example worthy of our imitation. The road I propose is necessary to us, and now. We want it now. The state of our possessions on the Pacific demands it. The time to begin has arrived. All the necessary information is on hand. The means are ready. The title to Oregon is settled, and a government established there, and population is growing up. California is acquired: people are there: and a government must follow. We have a fleet on that coast—troops there and going. Streams of population are concentrating there. Since the discovery of the New World by Columbus, there has not been such an unsettling of the foundations of society. Not merely individuals and companies, but communities and nations are in commotion, all bound to the setting sun—to the gilded horizon of western America. For want of an American road, they seek foreign routes, far round, by sea and land, to reach by an immense circuit what is a part of their own land. Until we can get a road of our own, we must use and support a foreign route; but that is a temporary resource, demanded by the exigency of the times, and until we can get our own ready. Never did so great an object present itself to the acceptance of a nation. We own the country from sea to sea—from the Atlantic to the Pacific—and upon a breadth equal to the length of the Mississippi—and embracing the whole temperate zone. Three thousand miles across, and half that breadth, is the magnificent parallelogram of our domain. We can run a national central road, through and through, the whole distance, under our flag and under our laws. Military reasons require us to make it: for troops and munitions must go there. Political reasons require us to make it: it will be a chain of union between the Atlantic and Mississippi States. Commercial reasons demand it from us: and here I touch a boundless field, dazzling and bewildering the imagination from its vastness and unimportance. The trade of the Pacific ocean, of the western coast of North America, and of eastern Asia, will all take its track: and not only for ourselves, but for

posterity. That trade of India which has been shifting its channels from the time of the Phœnicians to the present, is destined to shift once more, and to realize the grand idea of Columbus. The American road to India will also become the European track to that region. The European merchant, as well as the American, will fly across our continent on a straight line to China. The rich commerce of Asia will flow through our center. And where has that commerce ever flowed without carrying wealth and dominion with it? Look at its ancient channels, and the cities which it raised into kingdoms, and the populations which upon its treasures became resplendent in science, learning, and the arts. Tyre, Sidon, Balbec, Palmyra, Alexandria, among its ancient emporiums, attest the power of this commerce to enrich, to aggrandize, and to enlighten nations. Constantinople, in the middle ages, and in the time of the Crusades, was the wonder of western Europe; and all because she was then a thoroughfare of Asiatic commerce. Genoa and Venice, mere cities, in later time, became the match of kingdoms, and the envy of the kings, from the mere divided streams of this trade of which they became the thoroughfare. Lisbon had her great day, and Portugal her pre-eminence during the little while that the discovery of the Cape of Good Hope put her in communication with the East. Amsterdam, the city of a little territory rescued from the sea, and the Seven United Provinces, not equal in extent to one of our lesser States, became great in arms, in letters, in wealth, and in power; and all upon the East India trade. And, London, what makes her the commercial mistress of the world—what makes an island, no larger than one of our first class States, the mistress of possessions in the four quarters of the globe—a match for half of Europe—and dominant in Asia? What makes all this, or contributes most to make it, but this same Asiatic trade? In no instance has it failed to carry the nation or the people which possessed it, to the highest pinnacle of wealth and power, and with it the highest attainments of letters, arts, and sciences. And so will continue to be. An American road to India, through the heart of our country, will revive upon its line all the wonders of which we have read—and eclipse them. The western wilderness, from the Pacific to the Mississippi, will start into life under its touch. A long line of cities will grow up. Existing cities will take a new start. The state of the world calls for a new road to India, and it is our destiny to give it—the last and greatest. Let us act up to the greatness of the occasion, and show ourselves worthy of the extraordinary circumstances in which we are placed, by securing, while we can, an American road to India—central and national—for ourselves and our posterity—now, and hereafter, for thousands of years to come."

7. **WHITNEY'S RAILROAD.** The enterprising gentlemen at the head of this has, for five or six years, given it almost exclusive attention, and has perhaps more than any other man in the country illustrated the importance of a connection with the Pacific. He has explored personally a short portion of the route, and visited nearly every State in the Union, to induce their legislatures to co-operate. In this manner his outlay must have been very considerable. His proposition is to construct the road as a *private* enterprise, in consideration of a grant from Congress of thirty miles on each side of the road, from its *eastern* terminus at Lake Michigan to the *western* at the mouth of the Columbia, or at Puget's Sound, which is entered from the Straits of Fuca. Laterly, he has proposed a branch to the Bay of San Francisco. The sale of the lands, it is argued, will build the road in a period of about twenty years. The road after a certain period is to revert to the government.

The route projects from Lake Michigan, striking the Mississippi above the mouth of the Wisconsin, and six hundred and fifty miles *above* St. Louis; thence to the South Pass, 42°, and through the Columbia valley by Lewis's branch to the ocean. The Pass is seven thousand nine hundred and forty feet above the level of the Gulf. The mouth of the Kansas, on the route, is elevated seven hundred feet. In the next five hundred miles, an elevation of two thousand three hundred feet more

must be attained, to Republican Fork; in the next one hundred and twenty-eight miles, the elevation climbed is one thousand and four feet; in the next one hundred and seven miles, nine hundred and sixty-three feet; in the next eighty miles, one thousand two hundred and eighty feet; the next eighteen miles, seven hundred and fifty-six feet, or forty-two feet to the mile; the next eighty nine miles to the Pass, two hundred and twenty-seven feet. We question if this road to the mountains be as good as those projected to the southward. From the mountains to the sea, the map we publish will show the elevation and depression on all the routes.

ESTIMATED COST OF ROAD.

Grading, bridging, &c., except bridges across the Mississippi and Missouri rivers, for 2630 miles, @ \$ 5,000	\$ 13,150,000
Bridges across Mississippi and Missouri.....	800,000
Superstructure, single track, depots, turn outs, &c., 2730 miles, @ \$ 10,500	28,000,000
Engines, cars, &c., &c.....	10,276,600
Contingencies.....	2,000,000
Repairs upon road until completed and before it can earn support....	15,000,000
Total cost	\$ 69,226,600

TIME OF TRAVEL.

From England to New York	10 days.
From New York to Pacific, 3000 miles by railroad.....	5 "
From Pacific coast to Chang-hai, the heart of Chinese commerce, 5400 miles	16 "
Total (in place of present sea voyages four and five months).....	31 "
From New York to Australia.....	31 days.
" " " Manila	24 "
" " " Java	25 "
" " " Singapore	27 "
" " " Calcutta.....	29 "

In reply to an attack from Professor Forshay, Mr. Whitney, in our Review for October, 1847, stated that a canal through the Nicaragua would save but four hundred and twenty-two miles in the passage from London to Valparaiso, whilst to Sidney there would be one thousand miles lost; to Canton, six hundred and eighteen; to Singapore, two thousand two hundred and twenty-eight, in comparison with present ship routes. He maintains that no southern pass exists in the mountains less than twelve thousand feet (clearly a great mistake); that a southern road to the Pacific must pass through soft bottom lands, over great streams, and countries subject to overflow, bad climates, &c. None of which is true, for some of the southern routes proposed, in any greater degree than for his own route. His objections to the navigation of the Ohio is well raised, if that river must be adopted as part of the line of travel; but this would not be necessary in a southern route. His position, that Charleston is nearer to China by his route than by a more central or southern one, is not fairly stated, since his own figures give.

Charleston to Pacific—Whitney's route.....	2,919
" " Southern route.....	2,261
Less distance.....	658

And this saving of six hundred and fifty-eight miles in length of railroad travel, will compensate for much more than the loss in steamship navigation upon the Pacific. Subject to this objection, we furnish his tabular estimates.

TABLE of distances from principal Atlantic cities, etc., to Charleston, Vicksburg, Mazatlan, and to China, by the Southern route: also from Prairie du Chien, near the Mississippi, to Oregon, etc., etc., by the Northern route, with amount of differences, etc.

From	Southern Route.				Northern Route.			Diff. to Pacific.		
	To Charleston.	To Vicksburg.	To Mazatlan.	To China.	To Du Chien.	To Oregon.	To China.	Favor S. Route.	Favor N. Route.	Diff. to China in favor N. Route
Charleston		771	2,261	10,661	1,097	2,912	8,319	658		2,342
Richmond	427	1,498	2,688	11,085	950	2,779	8,172	84		2,917
Washington	554	1,325	2,815	11,215	988	2,810	8,210		5	3,005
Baltimore	594	1,365	2,855	11,255	948	2,770	8,170		85	3,085
Philadelphia	709	1,480	2,970	11,770	1,041	2,863	8,263		107	3,570
New York	796	1,567	3,057	11,457	1,141	2,963	8,363		94	3,094
Boston	996	1,767	3,257	11,657	1,341	3,163	8,563		94	3,094
New Orleans		415	1,905	10,305	830	2,652	8,052	747		2,257
Louisville		1,001	2,491	10,891	430	2,252	7,652		239	3,239
Cincinnati		1,132	2,622	11,022	450	2,272	7,672		350	3,350
Wheeling		1,496	2,986	11,386	560	2,382	7,782		604	3,604
Pittsburg		1,588	3,078	11,478	610	2,432	7,832		646	3,646
Cleveland		1,732	3,223	11,622	517	2,339	7,739		883	3,883
Buffalo		1,863	3,353	11,755	803	2,625	8,025		728	3,730
Detroit		1,425	2,915	11,315	486	2,308	7,708		603	3,607
St. Louis		803	2,293	10,693	300	2,122	7,522		171	3,171
Alton		826	2,316	10,716	275	2,097	7,497		219	3,209
Galena		1,208	2,698	11,098	60	1,882	7,282		816	3,816
Chicago		1,070	2,560	10,960	210	2,032	7,432		528	3,528
Prairie du Chien.		1,279	2,761	11,161		1,822	7,222		939	3,993

Mr. Whitney introduces testimony to prove the snows on his route are unimportant, prevail to but little depth, not every year, are dry and do not stand long; no greater cold than in New England, and no greater obstructions than upon the roads there. He argues that a southern route must necessarily earn dividends (a *non sequitur* always), and charge a rate of freight one cent per ton the mile against his *half cent*. Upon his estimates of one cent and half a cent is constructed a table,* which we have not space to give, but which shows a rate of freight varying from twenty-three to fifty-three dollars a ton to China, according to the route and the point of departure, or from one to two dollars the hundred weight.

8. MEMPHIS RAILROAD. By this we mean the road which our fellow-citizens of Tennessee and Arkansas are now advocating, and which

* Mr. Whitney's objections to Mazatlan as a terminus, have greater weight than they could have to San Diego, or Francisco. The sailing time from these ports would be somewhat longer than from Columbia river (the coal depots need not be in Oregon), but this would be counterbalanced by other advantages.

they propose to submit to a convention of the south-western States. The road would leave the Arkansas shore, opposite Memphis, and strike across the country, perhaps to Van Buren, with branches to Little Rock, &c. From here it would follow the valley of the Arkansas river* and into the Indian Territory, along the Canadian branch of the same river. Having left the valley of the Canadian, the route would be almost due west to Santa Fe, should there be found a mountain pass that will answer, which is nearly in the same parallel of latitude as Memphis. We know with no exactness the distance from Memphis to Santa Fe, but suppose it would not exceed nine hundred miles, as there is little detour, which is about the distance between Santa Fe and St. Louis. Explorations upon this route, with the view of a railroad, have not yet been made, though the expeditions of Mr. Gregg and others have given us many interesting particulars.

From Santa Fe the route would be down the valley of the Del Norte, following to some extent, perhaps, that pursued by General Kearney and described by Major Emory, which crosses somewhere about the parallel of 34° latitude to the valley of the Gila, pursuing that river to the Colorado, near its mouth in the Californian Gulf, and thence across the country to San Diego.† The distance between Santa Fe and San Diego by the route indicated is also about nine hundred miles, making the whole distance from Memphis to the Pacific ocean *eighteen hundred miles*. Should San Francisco or Monterey be selected as the western terminus, the distance would be greater and would be measured to some extent through the as yet unexplored regions of the Utah Lake. The distance between San Diego and San Francisco is between four and five hundred miles, and the two harbors will thus compare:

"The PORT OF SAN DIEGO is the most southern in the territory of the United States, and is of considerable extent, being in fact an arm of the sea; in length ten miles and in width four miles; from being land-locked it is perfectly secure from all winds. The entrance is narrow and easily defended, and has a sufficient depth of water, twenty feet at lowest tides, for large vessels. The tide rises five feet. The tongue of kelp, three miles long by a quarter of a mile broad, off the entrance of the bay, must be avoided by large vessels, but small vessels may pass through it with a strong breeze. The bank has three fathoms water upon it. During gales, this kelp is torn up and driven into the bay, where it is troublesome to vessels by the pressure it brings upon them, either causing them to drag their anchors or part their cables. There are many drawbacks to this harbor; the want of water is one of them, the river which furnishes the Mission with water, disappears in the dry season before reaching the bay, and the surrounding country may be called a barren waste of sand hills. The town of San Diego, consisting of a few adobe houses, is situated on the north side of the bay on a sand-flat, two miles wide. The mission establishment is seven miles from the

* The inundated lands of Arkansas, five millions of acres, according to Mr. Borland's Report in the United States Senate, one-seventh of the State, can be readily reclaimed.

† Major Cook in 1846, left Santa Fe considerably to the north and pursued a route which he described as perfectly level, with the exception only of seventy-three miles. We have not his report before us.

town, up a valley to the north-east, and here there is a good supply of water the year round. The river in the rainy season discharges a considerable quantity of water into the bay, bringing with it much sand, which has already formed a bar across False bay, rendering it useless; and well grounded fears may be entertained that it will eventually destroy this harbor also: this occurrence however may be prevented at slight cost. The whole country around San Diego is composed of volcanic sand and mud mixed with scoria: the land is unfit for cultivation, and filled with cacti, one of the many evidences of the poorness of the soil: this leaves the port of San Diego little to recommend it but the *uniform climate, good anchorage, and security from all winds.*"*

The BAY OF SAN FRANCISCO is thirty miles in length by an average of six in width; a large portion of its southern, eastern and northern shores, are bordered by extensive and wide mud flats, preventing the landing at low water of even a boat; so much so that the eastern shore may be said to be inaccessible for a distance of thirty miles; and this impediment prevents it from ever becoming useful, except by the construction of extensive artificial works. * * * * "These obstructions reduce this extensive bay very much in size, and it becomes still more reduced when the safety and convenience of vessels are taken into consideration; indeed, with the deep water, cross tides and exposed situations, there are but two safe anchorages, Yerba Buena and Sausalito. The former lies on the south of the entrance, between the island and town of the same name, and is but of small extent, with mud flats, bare at low water, to the channel; it is also very much exposed to the prevailing winds, which blow at times with great violence. It is the usual, but by no means the best, anchorage, and has but a scanty supply of water—not sufficient for the population of the town or the vessels that frequent it; this, added to the rocky point on which the town is situated, will prevent it from ever becoming the seat of trade. The population of the town exceeds five hundred inhabitants [several thousand now], and from its being nearer to the gold mines than Monterey, has become of late the most frequented. The bay of San Francisco is well adapted for a naval depot, or for a place for our whalers to recruit. Its possession insures to us the command of the northern Pacific and the protection of our large and extended interests there, but I know of no place where the natural site of a town can be found throughout the whole bay, and it appears to me extremely difficult to select one where the locality would permit of extensive artificial improvements."†

"The HARBOR OF MONTEREY is said to resemble the beautiful bay of Naples. It has water and capacities for the combined ships and navies of the world. The winds here never blow home, and the anchorage, therefore, is perfectly safe."‡

Major Emory thus contrasts the two positions of San Francisco and San Diego: "At present San Diego is, all things considered, perhaps one

* Charles Wilkes's, Commandant of Exploring Expedition, Report to the National Institute, 1849. Captain Wilkes gives preference to the harbor at the mouth of the Columbia river; but it is said, on the authority of Lieut. Howison of the navy, the harbor has entirely changed since Wilkes examined it.

† Capt. Wilkes of "Exploring Expedition," &c.

‡ Maury's letter to Mr. King.

of the best harbors on the coast from Callao to Puget's Sound, with a single exception, that of San Francisco. In the opinion of some intelligent navy officers, it is preferable even to this. The harbor of San Francisco has more water, but that of San Diego has a more uniform climate, better anchorage, and perfect security from winds in any direction. However, the commercial metropolis must be at San Francisco, owing to the greater extent and superiority of the country adjacent, watered by the rivers Sacramento and San Joaquin, *unless indeed, San Diego should be made the terminus of a railroad, leading by the route of the Gila to the Del Norte, and thence to the Mississippi and the Atlantic.*"*

The route from Memphis to San Diego has yet been scarcely more than reconnoitered. Mr. Gregg, in his *Commerce of the Prairies*, describes a journey made by him, with laden wagons, from Van Buren, on the frontier of Arkansas, to Santa Fe, but with none of that minuteness which is indispensable in forming our judgment with regard to a railroad.† Major Emery's Report covers the ground from Santa Fe

* Report of Major Emery, attached to Kearney's Expedition.

† There have appeared lately in the columns of the *National Intelligencer*, a series of ably written papers, signed "Opithloco," upon "Trade to China," in which eminent justice is done to the claims of southern cities, and the full advantages of eastern trade are enumerated. We extract a passage from the writer, in which he affords some interesting particulars of the route from *Memphis to the Pacific*: "Beginning on the west bank of the Mississippi, at Memphis, we will have nearly a perfect level over the alluvial lands to the bank of the St. Francis. In the construction of this part, it may be best and cheapest to place it on piles, five or six feet above the annual overflow. From the west bank of the St. Francis to White River will be over lands firm and above overflow; likewise from thence to the Arkansas, near Little Rock. It appears that Memphis is only about nine miles north of the 35th degree of north latitude, and Little Rock 24° south; but by pursuing the course of the 35th degree, we would cross the Arkansas above the mouth, and would utterly avoid the Fourche de Fave pass, near to Daville, on Jean Creek; and in our due west course our route is parallel with this stream to its head, across the Portea River, a small stream that empties into the Arkansas. We will be thrown a few miles south of our direction, by a short bend in the Canadian Fork of the Arkansas. We are then on the plain between the Arkansas and Red River. We will not have a stream to obstruct our direct course until we arrive at the False Washita; by crossing this stream sixty miles north of where it flows into Red River, we will pass through the southern point of the great American desert, extending north three hundred miles, to the head of the Platte River, with no streams in our course until we reach the Rio Grande, about twenty miles south of Santa Fe—where, from its being near its head, is an inconsiderable stream. And in the lands which contain the precious metals in so great abundance as to attract a trade in wagons from Missouri for many years, grading the road will develop many of these mineral resources.

"From this stream (the Rio Grande), pursuing our direct course, we pass the heads of streams on each side, none of which approach so near as to cross, we arrive at the Colorado, which discharges its waters into the head of the Gulf of California—passing again near the southern extremity of the Great Sandy Desert, one hundred miles in length, stretching north-west, which would be impassable, but is thus fortunately placed out of our way. And in the further pursuit of our direct course, we arrive at the head of Tule River, which discharges its waters into the bay of San Francisco, the termination of the Pacific road. Directly on our left is the river which flows to Monterey. The road will probably be constructed on the plain between these rivers, and may, with scarcely any variation, touch Monterey in its course to San Francisco, which is destined to be one of the great cities of the United States of America, and is only one degree north of the course of our road."

to the San Diego; but he, too, admits the hastiness of his notes, and that the best route was not always pursued. The purposes of that expedition besides were altogether *military*, and through an *enemy's* country, which prevented any closeness of observation. Col. Fremont, it is also understood, is now upon this line of exploration, or a part of it, with a view of facilitating the project of the St. Louis railroad. He designed crossing the south-eastern projection, or ridge of the Rocky Mountains, above Santa Fe and Spanish Peaks, and entering the valley of the Del Norte, trace that river to its source; he would then cross over the Rocky Mountains at some pass there to be discovered, and "survey his last line across the continent, complete his knowledge of the country between the Mississippi and the Pacific, and crown the labors of long explorations, by showing the country between the great river and the great sea to be inhabited by a civilized people, and practicable for a great road, and that on several lines, and which was the best." This exploration is one of the most important yet, and will be necessary before establishing any positive opinion in regard to a route to San Francisco from St. Louis, or indeed from any other point, through some other than the "South Pass," which is in a latitude fully five degrees further north than San Francisco or St. Louis. The government, too, it is said, are now about dispatching Captain Stansley into the Gila valley, and to the Great Utah Lake, by the valley of Arkansas, with the view of a full and complete exploration, occupying about eighteen months.*

The road from Memphis through Arkansas, Van Buren, and a great portion of the Indian Territory, judging from the nature of the lands through which it must pass, is of the most practicable character, and involving the smallest expense. The danger of overflow in Eastern Arkansas, can, without doubt, be obviated entirely, by proper levees, constructed in the north-eastern part of that state. Heavily timbered lands abound upon many parts of the route. Our facts are too meagre, however, to venture any precise calculation of obstructions and expense. We know that the Memphis convention, in 1846, pressed the completion of a military road to Fort Gibson, which, if fully explored, would give us all the facts that we want, to that point of the route. There are also good lands upon a great portion of the way, and to us it is perfectly clear, from all the facts we can gather, that the passage from Memphis to Santa Fe, presents, to say the least, no greater obstacles than that from St. Louis to the *South* or some other Pass in the mountains.

Mr. Gregg left Van Buren in 1839, with heavy wagons. He passed along the south or main fork of the Canadian branch of the Arkansas, which, near its sources, in the heights about Santa Fe, takes the name Colorado. He adhered closely to the river until the peaks of Angosturas were reached, when, for a short time, the valley of the Pecos was before him. For sixty miles before reaching these peaks or narrows, the party followed a plain road everywhere passable for wagons. Abrupt projecting routes, reaching even in height, 2,000 feet, added great risk to the passage of the narrows. A better road was however pointed out,

* General Worth is on his way from San Antonio, Texas, by the route of El Paso, to the Gila valley.

passing near the *Cerro de Tucumcari*, a circular mound, visible to the southward. This, on examination, was found to be all that was desirable.

It is to be regretted Mr. Gregg took no observations of the altitudes, &c., of the route. Reviewing the whole expedition he says:

"If we take a retrospective view of the country over which we traveled, we shall find but little that can ever present attractions to the agriculturist. Most of the low valleys of the Canadian, for a distance of five hundred miles, are too sandy or too marshy for cultivation, and the upland prairies are, in many places, but little else than sand hills. In some parts, it is true, they are firm and fertile, but wholly destitute of timber, with the exception of a diminutive branch of the *Cross Timbers*, which occupies a portion of the ridge between the Canadian and the North Fork. The Canadian river itself is still more bare of timber than the *Upper Arkansas*. In its whole course through the plains, there is but little except cotton wood, and that very scantily scattered along its banks; for some places for leagues together not a stick is to be seen. Except it be near the mountains, where the valleys are more fertile, it is only the narrow bottoms which skirt many of its tributary rivulets that indicate any amenity; some of these are rich and beautiful in the extreme, timbered with walnut, mulberry, oak, elm, hackberry, and occasionally cedar."

Comparing the route to Santa Fe, through Arkansas, with that of Missouri, he remarks:

"As regards the two different routes to Santa Fe, although Missouri, for various reasons which it is needless to explain here, can doubtless retain the monopoly of the Santa Fe trade, the route from Arkansas possesses many advantages. Besides its being some days travel *shorter*, it is *less intersected with large streams*, there are *fewer sandy sketches*, and a *greater variety of wood-skirted brooks*, affording throughout the journey, very agreeable camping places. Also, the grass springs up nearly a month earlier than in Upper Missouri, * * * * for the rigorous winters of Missouri often prove fatal to the unacclimated Mexican animals, &c."†

We extract the following from the circular of the Fort Smith, Arkansas, "California Emigrating Company," which, however, like other documents of the sort, must always be taken with "many grains of allowance."

"The route up the north fork of the Canadian River, as laid down by Mr. Josiah Gregg, in his '*Commerce of the Prairies*,' and lately traveled by a detachment of United States dragoons, under the command of Lieutenant Buford, to Santa Fe, leaving Santa Fe, however, to the north some distance, and going near Albuquerque, immediately to El Paso, and perhaps take the route traveled by Major Cook, United States army, in the year 1846. This road he describes, in a letter to Col. Abert, as being comparatively level, and the water and range good, with only a single exception of a distance of 75 miles. The whole distance from Memphis to the Pacific is estimated by Lieut Maury, of the United States navy, to be 1,500 miles; and Fort Smith being 300 miles nearer, the distance will be, according to his estimate, only 1,200 miles; but as a straight road has not yet been laid out, we cannot give any correct estimate of the distance from this point to the Pacific. However, we feel certain the distance is much

* Gregg's *Commerce of Prairies*, vol. II, 154: but what other route has any advantage in timber over this?

† Gregg's *Commerce of Prairies*, vol. II, 55.

neerer than was at first anticipated. Wagons can travel on this route with ease and safety, the plains being so large, the ground over which the company will have to pass can be selected, and bad places thereby avoided. Two hundred miles of this route is a plain wagon road; and for that distance provisions and forage can be purchased at very reasonable prices. It is supposed that the company will arrive at the point of destination in 80 or 100 days from the time of starting. We would here remark, that an excellent guide, one well acquainted with the country, and can speak the Comanche and other Indian languages, will accompany the expedition.*

We have constructed, with some considerable pains and labor, from all the various explorations west of the Rocky Mountains, and charts, a diagram,* representing,

1. The nature of the route and its elevations, selected by Mr. Whitney, after the Notes of Fremont, between the South Pass and the mouth of the Columbia.

2. Route, &c., from South Pass to San Francisco. (Fremont's.)

3. Route, &c., from Santa Fe, or Passo del Norte, 200 miles south of Santa Fe, to San Diego. (Emory's.)

On inspection of the profile view of the three proposed routes, in the construction of which, we were aided by our scientific friend C. W. Sears, Esq., of this city, it is evident that the one from St. Louis to San Francisco, by the South Pass, framed upon the very latest map of Col. Fremont, 1848, is so mountainous as to be almost impracticable. The route to the mouth of the Columbia is as bad, if not worse, whilst that from Santa Fe or the vicinity, to San Diego, by the valley of the Gila, is a most beautiful one, presenting but in a small portion any serious obstruction. The profile views are made with great care from actual surveys by government engineers; but these surveys are not as perfect by any means as they should be. They yet indicate very much. From the vicinities of the Del Norte, another route is suggested by Mr. Leroux, to the southward of the Gila, and intersecting that river at a considerable distance from its source; the road is supposed to be good—through an open prairie—if water can be had. It deserves exploration.

We could easily show that there are no grades on the San Diego route too considerable to be overcome by the present construction of railroads, even without inclined plains. This we may show hereafter. But it is remarkable, at this very period, two important inventions and patents are noted by the press, by James S. French, of Virginia; the one a brake for stopping an engine and cars almost instantly; the other for the easy ascent of any grades, without the use of inclined plains or leveling. A railroad may be laid down over the ordinary undulations of the earth, like a turnpike road, and engines and cars be so constructed that they can go over it with safety. To accomplish this object, the invention enables the engineer, by mechanical means, to supply any degree of adhesion which may be required, at any instant, and to dispense with it the moment he ceases to need it. And to do this, there are no rack-rails, or cog-wheels, or center rail; nor is there, by this plan, any such resistance to the progress of the train as would be caused by adding weight to the engine, in order to produce the requisite adhesion.

Having now gone over the entire field of projections, it is full time to pass to some general observations. A few points we think abundantly

* See Frontispiece.

evident, from the facts that have been introduced and from those that are readily suggested:

1. That no connection or line of intercourse between the Atlantic and Pacific Oceans is likely to be popular among us, or succeed, which does not pass through and intersect in its *whole* extent *our own territory*. All others depend too much upon the wills and caprices and jealousies of foreigners, which may at any moment put an end to the enterprise. Besides, such *foreign* roads do not, to the same extent, benefit and extend our own population, and conduct their persons and their property from location to location in the march of western empire. Any such roads adopted by us must be *temporary*; and with reference to canals, the great facts stand out, that the sailing distance to the east must yet be very vast, supposing them constructed; that their construction involves as enormous outlay, all things considered, as some central rail road; that if undertaken by a single nation, the jealousies of others would be excited, and no union of nations on the subject could be expected, from the almost impossibility of keeping such a canal *neutral*.

2. That if a great rail road be constructed through the possessions of the United States to the Pacific, that road *must be as nearly as can be* CENTRAL, to enlist the sympathies, regards, and co-operation of *all sections of the confederacy*. No city or town can set up a special claim. The object is NATIONAL, and the American people should speak. Hence the rivalries of the Lakes, St. Louis, Memphis, Natchez and Galveston, would be preposterous and *defeat* the best concerted scheme of either. Nor only must the road be *central* to command a sufficient support ever to start or construct it, or make it afterward prosperous, but it must be *upon such a line and to such a port* as shall be clearly established to be the best, all things considered. In such a spirit, difficulties and obstructions sink down into insignificance. The facts are yet not all before us that we may pronounce *authoritatively* and *decisively* which is that line and that route.

There are yet reasons and facts sufficiently cogent to determine our decided *preference*, in the present state of information on the subject, for the *Memphis terminus*, upon the Mississippi, and these we will concisely state.

1. This route to the Pacific, whether at San Diego or San Francisco, equally good harbors, at least if the former be not the best, to leave Monterey out of the question, is as short, *very nearly* as any other American route proposed—much shorter than the road to St. Louis—many hundred miles less than that proposed by Mr. Whitney.

2. The Memphis road is more nearly in the *center* of the continent (Natchez being that point longitudinally*), is nearer the mouth of the Ohio, nearer the Atlantic Ocean, is at a point *always* navigable, and is as easy of communication with every other section of the Union, as (we maintain *much easier* than) any other road.

3. The route from Memphis is *at least as good*, we believe *better*, than any other, so far as the face of the country and obstructions are concerned. It is not so far *south* as to be within the regions of sultry

* Dr. Cartwright. We have it on other authority, that the lines drawn through the extremities of Maine and Texas. Florida and Iowa, intersect each other at *Memphis*.

suns and disease, nor yet so far *north* as to be among continued snow and ice, but is through a temperate, and, for a large part, most salubrious climate.

4. It is at a point where the *Mississippi is always navigable*.

Notwithstanding this *preference*, however, convince us of a better *American route* and we yield. More full and perfect surveys may fix us in our prepossessions or altogether destroy them. Let us have the surveys *at once*. In the spirit of compromise between the North and the South and the West, should rivalries arise, they might perhaps only be silenced by the selection of a *terminus* at some point *opposite the mouth of the Ohio River*, supposing that surveys should establish its equal practicability.

For ourselves, we declare for the road—the road as early as possible—the road over the best route, and with the best *terminii*—the road most calculated to subserve the purposes of the *whole union*—and we do not intend that any idle preferences or prejudices, or worse still, any discreditable and unpatriotic rivalries shall attract us to the right or the left in the pursuit of this great and stupendous enterprise, which shall mark an epoch in the history of mankind. Here indeed the object is *our country*, and MAN.

Stupendous as appears this proposed enterprise, there is nothing in it at all impracticable. For a nation so extraordinary as ours, the *fiat* has only to go forth, and the *deed is done*!

We say not, nor pretend to say, how this road shall be built; whether, as Mr. Whitney proposes, by a grant of the land on either side to a *private company*, making of them the greatest, the wealthiest, and perhaps the most dangerous corporation in the world; or, as Mr. Benton would have it, by government appropriations and government officers, thus fearfully increasing executive patronage, and leaping at once headlong into a system of such prodigious expenditures for *internal improvements*, by the Federal Government, as shall in a few years make it lose the *federal* character altogether and become, unless some checks can be devised, one of the most powerful and irresistible *centralisms* on earth—or yet by *State* appropriations and action *conjointly with individuals*, as Mr. Calhoun perhaps would have it, or as economy and expedition might demand, since government ever pays *much* and gets *little*, if indeed the means of States and individuals are adequate to the purpose. We express not an opinion here. Concert of action, counsel, deliberation, are required. Wise heads must be called upon to pronounce. We see difficulties, vast difficulties in either or any view, but *our faith in the road, and the road at once, is unshaken*.

It is demanded by our *wants*. Would we be without this great link to bind together our continent, extend our pressing population, fill up our interior valleys and vast wilderness with an enterprising people, secure our defenses by land and water, and bring together our merchants and manufacturers from every part of the continent in common marts?

We want the road to develop our *mineral resources*, which appear to be inexhaustible. We know not yet the treasures which are beyond the Rocky Mountains. We have found virgin gold in quantities to bewilder our imaginations and astound our judgments, yet we know scarcely any thing yet of the country. Are there other precious metals?

Is there iron? is there coal? which have enriched Pennsylvania and given rise to her public works, the most extensive in the Union.* We know that the quantity of salt is altogether inexhaustible on the route; and is this article so valueless that it will not bear a transportation two or three times as great only as is borne by the coal of Pennsylvania?

We want the road, finally, to complete for us that *commercial Empire* after which we have sighed—which has been indicated for us in every step of our progress, from the landing of the Pilgrim Fathers, and which appears to be *ours* by a manifest and inevitable destiny. *Shall we not then have it?*

To be sure there are some fifteen hundred, or, it may even be, two thousand miles of country to be traversed over—a thousand miles of howling wilderness—mountains, hills and valleys and rivers—all of that! Sixty, or perhaps one hundred million of dollars must be expended and lie for a time without income—even so. But what is *two thousand miles* of railroad to the American people, and what is a *hundred millions of dollars?*

Twenty years ago there was not in the United States a single locomotive engine in successful operation. Our first railroad was not completed until 1825, and it was not until October, 1829, that the empire of *steam* was established upon our shores. In that twenty years what events! Every State and section of this vast republic are already penetrated and traversed by the magic power it engenders. The number of miles of railroad already constructed and in operation, is *six thousand four hundred and twenty-one*, over one thousand miles of which center at a single city, Boston, having cost \$49,221,400, and earning clear of all expenses in 1848, \$2,678,745. These American roads have varied in cost from 8 to \$60,000† per mile, or assuming an average of \$30,000: the total amount expended on railroads among us during the *first twenty years* of their existence, is about *two hundred millions of dollars*.

We begun these railroad enterprises with 13,000,000 of inhabitants, we have now 22,000,000. We begun them with 1,700,000 square miles of territory, we have now 3,000,000 miles; we begun with an annual industrial revenue, which has increased in a much larger proportion than our population; and we set out upon the career of the *twenty years to come* with an entire familiarity with the business of railroads in every point, and with such facilities and improvements and reductions in cost‡ as no human being twenty years since could have foreseen. Shall the future, then, be staggered by this project of a railroad *only one-third* as long as the past has already built, more than *one-half less expensive* and *one-fifth part in extent* of the railroads which have been projected, according to Dr. Lardner, in the various States of the Union for future construction?

When the first American road was constructed, "*twenty tons on a*

* Lieut. Maury, in his letter to Mr. King, says that Lieut. Minor, of the Navy, who was Governor of San Diego, informed him of having found bituminous coal in the Solidad valley, about six miles from the port. He found it on the surface, and used it in the forge, though it was impregnated with sulphur.

† The Boston and Lowell cost \$68,196 per mile. Reading railroad, Pennsylvania, much more.

‡ The average price of iron alone in bars, at Liverpool, has fallen from £14 per ton, in 1825, to £5.5 in 1849.

level road at *ten miles an hour*," was the extent of the requirements of those who were in advance of the age in these matters. And even this degree of confidence in their power was confined to a very few persons in England, while in all Europe besides, and with here and there an exception in this country, they were as little thought of as the magnetic telegraph in 1840! And yet at this date a locomotive, even of American manufacture, which will haul from a *thousand to twelve hundred tons* on a level road at the same speed, is no uncommon thing.* There is yet existant that recklessness, we would say that *insolence*, of opinion, which would set itself up in judgment here, and determine, as it did twenty years ago, the acme of progress is reached, and your schemes of railroad extension are visionary and impracticable! There is a modesty in true science which almost reaches to the *faith* of Ter-tullian: "this is impossible, it is therefore true," for who is it that shall determine the *impossible*? Those who *think* ever find it easy to *conclude*.

What have other nations done in the progress of railroad extension? England in thirty years, has built and set in operation 3549 miles of railroad, costing \$550,706,802. In 1845, there was 4000 additional miles chartered, at a computed cost of very nearly as much more, making, together, a railroad investment of \$1,000,000,000! A single one of her roads, the *North Western*, is 428 miles long, and cost \$104,114,633. Has Britain so got the start of us, who have nearly equalled her in population, that she must bear the palm of great deeds forever alone?

France had, in 1846, 1000 miles of railroad—Belgium 348—Austrian Dominions 1935 miles—Prussia 700 miles—all Germany in construction 7600 miles, in operation 4760 miles. *Nine or ten thousand miles* of railroad built upon the continent!

Even Russia, despotic Russia, is on her way from St. Petersburg to Warsaw and Cracow—to Moscow—to Odessa, to connect the Volga and the Duna: these are all stupendous works.

The following table, from a late number of the Railroad Journal, will show all the railroads *in operation* in Europe and America, and their cost.

	Miles.	Cost per mile to Jan. 4, '49.	Total.
United States.....	6,421	\$30,000	\$ 192,630,000
Canada.....	54	30,000	1,620,000
Cuba.....	250	38,000	7,000,000
Total in America.....	6,725		\$200,250,000
United Kingdom.....	4,420	145,000	640,900,000
France.....	1,250	110,000	137,500,000
Germany.....	3,370	50,000	168,500,000
Belgium.....	495½	80,000	39,640,000
Holland.....	162½	25,000	4,062,500
Denmark and Holstein.....	282	40,000	11,280,000
Switzerland.....	78	50,000	3,600,000
Italy.....	162½	90,000	14,625,000
Russia.....	113	60,000	6,780,000
Poland.....	187½	50,000	9,375,000
Hungary.....	157	50,000	7,850,000
Total in Europe.....	10,678		\$1,044,402,500
Total.....	17,403		\$1,244,662,500

* American Railroad Journal.

If we ask, what has been attained in regard to *speed*? When Mr. Stephenson asserted in England, *twelve miles an hour* might be attained, he was hooted—it has reached now forty-seven and five-tenths miles, and we understand, more lately, even as high as *sixty miles* an hour on the Great Western road in England. A scientific man (Dr. Lardner) would not undertake to fix a limit *short of two hundred miles an hour*.

If we ask in regard to *economy* of travel and freight? The Erie Railroad, eighty-seven miles in length, transports its passengers at one and seventy-two tenths of a cent per mile, and the Providence Railroad established its rates, a few years ago, at *one cent per mile*. Coal is transported in Pennsylvania, at the rate, we learn, of *one cent per ton per mile*, and the average freight upon New England roads is less than two cents. Compared with any other mode of travel, where can competition arise? The British railroads carry *bale* goods at two pence per ton per mile, and twenty miles an hour! Some of the best of our roads have declared over ten per cent. annual dividends, whilst those of Europe have gone as high as twelve and a quarter per cent., and in England 4.24 per cent. was declared upon a gross receipt in 1848 of forty-seven millions of dollars on all the lines.

If we ask in regard to *safety*? Dr. Overton, of Nashville, stated in 1845, that upward of forty-four millions of people had traveled over the different railways in Great Britain, in five years, *with the loss of only ten lives*. In Paris, in 1844, one million eight hundred and eighty-nine thousand seven hundred and eighteen had traveled *without a single person being injured*, whilst in the same period there were nine killed and two hundred and eighty-three wounded by the common road-carriages! In our own country, however, from greater recklessness, the accidents have been much greater, though, out of seventeen millions of passengers transported on the Massachusetts railroads, in 1846-7-8, the whole number of fatal accidents were one hundred and eight (twenty-four only being passengers), being *about six in every million*! We question, too, if this is not greatly higher than the average from year to year.

Should we falter, then? For as it is sufficient that Great Britain has built a *single road*, costing *one hundred millions of dollars*, as much as is required for a road across our continent, and that the statistics of our own country, as carefully collected by our public officers at Washington, show an *annual income*, realized from all branches of industry among us, amounting to *two thousand millions of dollars*.* If we were to build the road in ten years, not perhaps an impossibility, and the income of the nation were not augmented, an utter impossibility, the amount annually expended on the road would be ten millions of dollars, or *one-half of one per cent.* of the whole annual *income* of the country!

Our public works, we mean of the states, and cities, and government, have already cost perhaps five hundred millions of dollars. We pay in taxes, state and federal, &c., sixty or seventy millions annually, and expend, now and then, when the humor seizes us, one hundred millions of dollars in a single year, and on a single war. What of

* Patent Office Report, 1848.

these things! The credit of the American nation was never so high before, and wealth and prosperity never so universal among us.

We all know the extraordinary stimulus which was given to British industry, and the prodigious strides that were made by that empire when the wars of Napoleon were causing her an expenditure of one hundred and fifty millions of dollars a year over and above her vast and over-taxed revenues, and in twenty years an expenditure of three thousand millions, all of it raised among her citizens.

The Romans constructed fourteen thousand miles of road, a single one of four thousand miles, many of stones and rocks joined with great care, which remain sound to our day; they had, and we find among their ruins, aqueducts bringing water through rocks and mountains for sixty miles, over valleys raised upon immense arcades of stone, and supporting large canals. The Egyptians, for vain purposes, could construct prodigious pyramids, obelisks, and statues, sometimes elevating single stones of seventy feet square. The Babylonians had their hanging gardens and great wall—the French built the great Semplon road across the Alps—the British cut a tunnel *under the Thames*, floating with all its navies—the Chinese put up a GREAT WALL to protect their empire, fifteen hundred miles long, carried over the highest mountains, through the deepest valleys, and continued by bridges over rivers, fifteen to thirty feet in height, with a breadth of fifteen feet at the top, of masonry, with square towers at short intervals thirty-seven feet high! They build a great canal of six hundred and fifty miles! Even the ancient Americans, if Montaigne can be credited, had a road from Quito to Cuzco, nine hundred miles long, twenty-five paces broad, *made of stones ten feet square*. In fact, there are ruins all over our country of stupendous ancient works, that might perhaps make our Pacific railroad itself blush.

Build the road, then—it is for *us*, and not for our children—it is within our easy effort—it is most promising in results—it will create, as it goes along, the trade which shall sustain it, and will even carry with it, from station to station, the timber, foundations, and supports, which it requires, from the forests to the prairies, like man himself, in his progress through the wilderness, laden with the material which is to nourish and sustain him.*

* Many roads in our country have already done this. How many villages do we find springing up all along our railroads, and what an extent of country do they bring into cultivation. The amount of trade between any two points is always vastly enhanced by them.

The trade of Santa Fe, in its present discouragements, amounts to perhaps nearly one million of dollars per annum both ways, for the supply of Chihuahua and the other neighboring provinces. The cost of freight is full twenty to twenty-five dollars per hundred pounds. With a reduction of this freight to one dollar the hundred weight, what extension of the New Mexican trade may be contemplated!

It will cost the fifty thousand passengers, who are going to California, two hundred dollars each—ten millions of dollars. If, in twenty years time, that number of persons were to pass and repass from the United States, or the one-half of them, we should have from this source, from the road alone, several millions of dollars.

Five millions of dollars clear of working expenses, which in New England are estimated at fifty-four per cent. of gross income, would be five per cent. on the cost of road—a good dividend. To do this, the gross income must be ten millions

If we can suppose a population on the route of this communication, and in constant use of it, of four millions only, and that it will reach the number in twenty years would not seem improbable, considering the riches of California and the past progress of our western country, and the impetus the road itself would give, *that population alone would support the road*, with its travel and trade, judging from the number of miles of railways we at present require.

Thus, then, if not one dollar of eastern trade is realized by our Pacific railroad, if begun now, it is capable, in less than one generation, of being as profitable as other American roads!

Demonstrate, if it can be done, that we get the trade of India, or even make it *highly probable*, and what motives are there superinduced to gratify national avarice or ambition.

We call upon the Memphis Convention, then, to act with energy and promptness. Other routes are pressing, and their partizans are sleepless. Some of them have the advantages of surveys in progress. Col. Fremont is engaged upon the St. Louis route. Let the city of Memphis, and the neighboring towns of Arkansas, make a contribution for an immediate survey—a few thousand dollars will be sufficient. Let an engineer be appointed, who shall start at once, say in August, over the route as far as the Pacific at San Diego. A company of eight or ten can easily be procured to accompany him, at slight expense. They can reach San Diego in time, after a reconnoissance, for a report to reach the United States in time to influence the action of the very next Congress—say in January or February next. We believe this perfectly practicable, and that the necessary funds could be raised. Reliance in this emergency should not be placed upon explorations to be sent out by government, which are too tedious.

As a Southron, we confess a deep and abiding interest in these schemes to connect the two oceans. Our own cities must revive under their influence, and commerce visit again and rule in her wonted marts.

We have Richmond and Charleston and Savannah, Mobile and New Orleans. Why has the progress of all of these, save the last, been unnaturally checked? Why has Charleston, which, near the close of the last century, doubled New York in the extent of its commerce, fallen so infinitely behind? The operation of our federal system has built up New York, and centered in it nearly all the foreign trade of this nation, which is conducted with the produce of southern climes.

Will men tell us that our slavery* has been the retarding cause, when it is known to all the world that whatever of products this nation has sent abroad and used in her commerce, until within a year or two, have been the *exclusive creation of this very slave labor*? The sweat of the African and the bondman has as much built up the granite fac-

of dollars. One hundred and fifty thousand passengers using the road, in whole or in part, for *travel* backward and forward, to Santa Fe, New Mexico, California, Oregon, India, South America, from the United States or from Europe, at sixty dollars each, would give this amount!

* We trust our readers will all procure and study the able lecture of Elwood Fisher, of Cincinnati, in which he refutes this calumny, and vindicates for the South a high social, political, and industrial condition, for which her citizens need not blush. We shall have more to say about this lecture hereafter.

tories and palaces of New England, and ordered her thousand railroad routes, as it has harvested the rice fields of Carolina, nurtured the cotton of Mississippi, or crushed the cane of Louisiana.

Are southern climates unfavorable to enterprise and trade? Has the South ever been backward in contributing her quota of great minds, and working minds, in every department of our country, in peace or in war? Antiquity refutes the libel, that southern latitudes are not fitted for extensive commerce. The empires of Assyria, Egypt, Media, Persia, and Arabia were *southern*. All civilization has come from the *south*—the Greeks and the Romans were *southerners*. Venice was a *southern* city. Were not all the *southern* Indian tribes of America, at the discovery, more advanced in civilization than the northern—Mexicans, Peruvians, Natchez?

And what shall be said of *MOBILE*, our neighbor city, which is even now projecting a railroad to take her, perhaps, five hundred miles, to the mouth of the Ohio; and what of *NEW ORLEANS*, the emporium of a dozen states, and of as many more to be formed, we trust, in the future—a city more strictly *commercial*, perhaps, than any other upon the face of the earth—which has sprung up, as it were, among the marshes of the Mississippi, an infant Hercules, feeding, growing, and enlarging upon *TRADE*, and incapable of a single breath without the workings of its great arteries—stretching out its broad arms and drawing in the wealth, resources, and power of an empire—challenging, in its march to greatness, and threatening to outstrip, every other commercial mart upon the continent.

Yes, we can build up again *southern* marts, and that when the continent is “bridged” by a railway track, connecting with Charleston and Savannah and Mobile—for these cities have all routes in progress to the Mississippi—and with New Orleans by the unrivalled navigation of the lower Mississippi, the cheapest and the best navigation in the world. Then shall the destinies of New Orleans be fulfilled; and, commanding the Gulf of Mexico, she shall go out to trade in eastern products, having for her exclusive markets, the West Indies, Mexico, and South America, and a common interest in the commerce of all other countries.

This period may be distant; but it will come if we do our duty—do it manfully to ourselves and to our posterity—regarding the perpetuity and power of our glorious confederacy, but not unmindful—no, not for a single instant, though traitors assail—or recreant to *OUR OWN HEARTHS AND HOMESTEADS, and THE SACRED INHERITANCES OF OUR FATHERS.**

* The following extract from the letter of a distinguished friend, is commended to our readers for their consideration. The author is one of the best informed men in matters of this kind, one of the ablest reasoners, and, withal, is as well known as almost any man in our country.

“You know my views as to the claims of Memphis; Memphis and St. Louis are now the rivals for the eastern terminus. Suppose the route from each place should be found equally practicable, let us see how the case would stand. Virginia might go for Memphis; North Carolina would be lukewarm; South Carolina, Georgia and the seven other southern states, including Texas and Tennessee, would be all most unanimous—eleven states. Kentucky and Maryland we will call doubtful, though I rather think they would be most in favor of St. Louis. Ohio, Indiana, Illinois, and all to the north, would go for St. Louis; so would the eastern states, and all the free states; for I can tell you that the accursed question of slavery is already mixing itself up with the road, and the free states, who are removed from

ART. II.—MISSISSIPPI.

A SKETCH OF THE GENERAL CHARACTER, AS TO SOIL, CLIMATE, PRODUCTIONS, &c., EMIGRATION, PROSPECTS, &c., OF MISSISSIPPI.

To a Journal devoted to the interests of the Valley of the West, matter touching any portion of it, I trust, will be acceptable. To an observer of the present day, indeed, it is somewhat strange that this section of country did not earlier attract the examination of the enterprising to the many points of interest to be found in its bosom, as well as the research of literary labor in regard to its earlier history. Surely it is a theme, in all its bearings, worthy of the attention of our ablest and wisest. The philosophic Frenchman, De Tocqueville, writing of our country, says: "The Valley of the Mississippi is, upon the whole, the most magnificent dwelling-place prepared by God for man's abode." And, in speaking of the Atlantic States, he says again, that, "the center of power still remains there, whilst, in the backward States, the true elements of the great people, to whom the future control of the continent belongs, are secretly springing up." Scarce fifteen years have elapsed since the above was penned by a sagacious foreigner, yet they have served far more than to fulfill his remarkable prediction. And here I might say much on this, which would be alien to the purposes of this brief article. As to the truth of it, it sufficeth that there is no more pertinent evidence needed for the moment, than the establishment and success of the "Commercial Review of the South and West," located at the great seat of their trade and power, and devoted to the complex and mighty interests growing up in their midst. May it continue to prosper, and remain worthy of the important duties it has assumed.*

Among the fair sisterhood of States, so beautifully traced out on the bosom of the great Valley of the West, there is none more interesting than the State of Mississippi, bearing, as it does, the name of their common boast, the Father of the American waters. Though among the first of the Western States admitted into the Union, Mississippi seems only for a brief period to have attracted much of the general attention. During the prevalence of the great land speculations, which are a part of the history of the West, its southern portion came fully into market,

it, will not go for it if it is to go through slave territory. Opposition, it will have, from New York and Massachusetts both, on these grounds. Now suppose we say about the mouth of the Ohio river for the terminus; we get Kentucky, Maryland, Pennsylvania, Ohio, Indiana, Illinois, and in addition to the others to the south. These states can carry it, and the south, if it cannot get it as low down as it would have it, must, nevertheless, get it as low down as it can.

"I do not wish to give the question this turn, but I think it wise to look things in the face.

"I make these suggestions to you, not because I mean that you should quote me for father, or speak of it, but because you asked me for my views upon a subject that is nearest to my heart, and because I think it wise for southern people to have their eyes about them; and, above all, because I think the convention should not, in the present meager state of information as to routes, commit their constituents to any *particular* route."

*The writer's compliment is acknowledged; but, alas! the "success" of the "Commercial Review" has not been as eminent as he supposed, in the past, whatever may be the hopes of the future.—Ed.

and, some years later, similar scenes were re-enacted at the sale of that fine tract of country in the northern part of the State, known as the "Chickasaw session." After the disposition of the greater part of the public domain, at these sales, interest seems to have subsided as to the State, and to have turned aside in the pursuit after the rich loam of Louisiana, the new regions of Arkansas, and the varied expanse of the young republic of Texas. Among the many causes which might be assigned for the comparative neglect into which the State seems then to have fallen, I will mention only one. It is a conceded point, I believe, that our western land sales were at the same time the cause, as well as the *nucleus*, of much reckless speculation, in which *bona fide* settlers could not participate, and which was managed and governed by gambling traders from all quarters of the United States. The State banks of the time, managed as they then were, furnished the food in this headlong race after fortune. Without a further waste of words, we have here the cause and the course of some of the most remarkable events in the private financial history of our people in the West. No land sales presented a higher degree of excitement, or more gigantic schemes of speculation, than in Mississippi. No State plunged with a bolder leap into the corrupt banking system of the times, and nowhere did more disastrous consequences follow in the train of either. The monopoly of large bodies of the public lands in the hands of a few, to the exclusion of the great mass of the people, and the profits of gambling, instead of the regular returns of honest industry, were the legitimate results of the one and the other. In the crash of 1836, '7, '8, and '9, an almost universal bankruptcy ensued amongst us, and some of the finest portions of Mississippi became partially depopulated. Then, in the breaking up of our miserable banking system, many unhappy consequences followed, the baleful effects of which have pursued the State, kept down its natural growth and prosperity, and are yet seen, and daily felt, in our courts of justice and our halls of legislation. The effects of these causes (proceeding from whence they may, for I will not undertake to say *here*) are very obvious. They have greatly impeded our increase in population; turned away from us the goodly tide of eastern emigration, and thus crippled the revenue, resources, and power of the State. In speculative schemes, the agricultural interests have been grievously neglected, and, in its infancy, our rich virgin soil has been squandered and exhausted. I will not dwell upon the abusing effects of this race after gold, on the intellectual growth and character. It is to be seen amongst us; and there are many, rarely and nobly gifted, who look with vain regret on labors expended in the race for speculation and money, which, if properly directed, would have made them useful to their country, an ornament of general society, an honor to their State, and enabled them to have left to their children a lofty heritage of fame. Lastly, from peculiar causes, the confidence of our sister States in our general policy and system of laws, was entirely destroyed. But a great change has taken place. The old Regime of Mississippi has passed away, and better times, I hope, are ahead of us. Our lands are now in the hands of earnest cultivators. The banking system is no more, and but one diminutive member of the tribe is left to remind us of the days of the "olden time." The laws and legisla-

tion of the State have become permanent and settled. We have, at last gone through the fiery ordeal; credit and confidence have been restored, and the present population of Mississippi is almost unindebted. Our State is once more attracting the share of public attention to which her many natural advantages so richly entitle her. To these it is my present intention briefly to call the notice of your readers.

The State is comparatively small. It yet presents a great variety of soil, and is divided into many different districts. The upper portion of the State is generally known as North Mississippi, though the region thus designated includes a portion only of the North. This section of the State came into market and cultivation some twelve or fifteen years ago. The surface of the ground is rather rolling, but generally it is very clean—has an open, champaign appearance, and is beautifully wooded with oak, hickory, &c., devoid of undergrowth. The uplands produce very abundantly for a year or two, when they are apt to be ruined by heavy rains, the substratum of the country being sandy. The valley lands, as they are termed, are much more durable, the soil being heavier and darker, and are highly productive; but they are liable to be, and are frequently, submerged, acres at a time, under billows of sand washed from the uplands during the heavy freshets. Cotton has hitherto been the chief product; but as the soil is becoming exhausted, and the country colder from being more open, its cultivation will probably be in some degree abandoned, and attention given to lighter crops. It is considered a healthy country. The water, what there is of it, is very good; yet it cannot be said to be well watered. There is a small creek, called Cold Water, in its borders, and the Tallahatchee River makes from it. But for the scarcity of water, I presume it would be a good stock country, and also proper for the raising of small grains. The chief outlet of this region is by wagons, to Memphis, Tennessee, which town it may be said almost to have built. Before the Chickasaw Cession came into cultivation, it was a muddy village, and since, in a few years, through its wagon, grocery, and cotton trade, it has sprung into the fair and stately city, which now salutes the eye of the traveler from the brow of the ancient Chickasaw Bluff.

The settling of this region is one among the many remarkable events in the history of the rise of the Western States. Fifteen years ago it was an Indian wilderness, and now it has reached and passed, in its population, other portions of the State of ten times its age; and this population, too, one of the finest in all the West. Great attention has been given to schools and education, and here has been located "the University of Mississippi," so amply endowed by the State, and now just going into operation, under the auspices of some of the most able professors from the eastern colleges. There is no overgrown wealth among them, and yet no squalid poverty; the people being generally comfortable, substantial, and independent farmers. Considering its climate, soil, health, and general character of its inhabitants, I should think no more desirable or delightful residence could be found, than among the hills and sunny valleys of the Chickasaw Cession.

Another section of North Mississippi is called the "Prairie," or "Tombigbee," country, commencing in the extreme county of Itawamba, covering the north-east part of the State, and sweeping far down on

the Alabama line. The country is uniformly level; presents an almost unbroken flat, with scarcely a tree; covered by rank grass; dotted sometimes with pools and marshes, and intersected by dull, sluggish branches. The soil is a dark, heavy loam, coal black, and of surprising strength and fertility. The dirt is different from that of lower Louisiana in this, that it is more of an original, and less of a depositary, character; and also in being thick and highly adhesive, instead of light and *ashy*, as the former. It is also corrosive, and deeply impregnated with lime. The soil is a strong one, and certainly inexhaustible. The crop is, and ever will be, cotton—of which the yield is abundant, when the rank grass of the prairie is overcome by cultivation, and the cotton is not ruined by the diseases incident to the strong nature of the soil. The black mud becomes excessively disagreeable in wet weather, and the rains are very heavy, and render transportation through the country, as well as its cultivation, very laborious. The yield of corn is luxuriant and abundant.

This region, though lying by the Chickasaw counties, finds its market at Mobile, by means of the Tombigbee river principally; a fine stream, and navigable for good boats seven months of the year. The head of its navigation is Aberdeen, a thriving town in Monroe county, sprung up in a few years, and already a place of very heavy trade; the third shipping point in the State, having cleared near forty thousand bags of cotton the past season. The border counties, down the Alabama line, change from the prairie, and partake more of the character of the Chickasaw Cession. It is a beautiful and healthy range of counties, finely watered, and, for several years, fast increasing in population and growing in wealth. Cotton grows well, and the lighter grains abundantly, which is wagoned to Gainsville, or some shipping point in Alabama, on the Tombigbee river, and thence to Mobile.

A large district of the State is known as East Mississippi, which really includes the South East, and part of the Southern portion. Though one of the oldest, it is one of the most thinly settled portions of the State. The people of East Mississippi boast, and with reason, of their good health, pure bracing air, and delightful water. The character of the land is mixed—some poor and some very rich—broken hills and fertile valleys. Cotton is produced, though to no great extent; corn and small grain abundantly; sometimes rice in small quantities. Fruits are plenty. This region is somewhat famous for cattle, in which a chief part of the possessions of many of its citizens consists; hence has often been applied to them the familiar soubriquet of the "cow counties." The country is indeed highly *pastoral* and possesses many of its pleasant characteristics; without the soil or the market for the sole cultivation of the heavier Southern staples, it rejoices in other advantages, contributing perhaps more nearly to the general happiness of its people. Scattered thick here and there, are to be found lands of the most fertile and generous cast; and there cannot be met with a more independent or hospitable community than among the East Mississippians. Among their fertile valleys, and on their green hills, is to be found "many a cozy nook and dingle, bushy dell and bousky bourne fram side to side," where are to be seen the bright eye and rosy cheek of health, and to be felt the warm heart and generous hand of a frank and manly people.

A small portion of their trading is done at Jackson, the *present* terminus of the Vicksburg railroad; a small portion down Pearl river to New Orleans, and the greater part to the city of Mobile.

The portion of the State bordering on the sea shore, with its bathing, fish, oysters, and pleasant summer retreats, is well known to the dust-covered denizens of New Orleans. It is becoming a place of resort, as well for own people as for the citizens, and bids fair soon to rival the famed gatherings of Newport and Cape May. Back from the sea coast is generally a sandy, broken tract, covered by quantities of fine pine. The turpentine business is already attracting attention; application has already been made by individuals to the General Government for grants of public lands there situated, in order to test the business and thereby enhance the value of the residue. A large factory has been opened, and others are preparing for the business. The position and material favor such a trade, and in a few years it will no doubt become heavy and profitable, and furnish a fine investment for capital.

The south-west and country above it, though the oldest, is the portion of Mississippi least known to the writer. The soil is rich, and the population numerous, wealthy and highly distinguished for intelligence. The course of trade of a portion is through Bayou Sara, on the West Feliciana railroad, and the whole to New Orleans, through some point on the Mississippi river. Among others may be mentioned the ancient and time-honored city of Natchez.

I will now direct your attention to the only remaining section of Mississippi which I can notice. Commencing some fifty miles below the mouth of the Yazoo River, inclining to the interior for about one hundred miles in a line gently circling northward, up through the center, then diverging to the northwest to a point below Memphis, including the counties of Desoto and Panola, is to be found as noble a sweep of country as any in the world. It is washed by the Mississippi from Memphis to Vicksburg, and is intersected by the Yazoo, its head waters and tributaries, throughout its greatest extent. The facilities for market are unequaled. The Yazoo river, running, as we have said, through nearly its whole extent, is an excellent stream, affording steam navigation sometimes as high as the southwest corner of Marshall county. The soil is of the most productive character, being, as it is called, *swamp land*. It possesses all the strength of the prairie lands, without their sticky, adhesive and corrosive nature. This region of our State has come into cultivation at a comparatively recent period; it having been, heretofore, considered damp and unhealthy. This impression is fast losing ground, and the cotton planters, deserting the rolling uplands, are fast pouring in upon the "swamp." Indeed the impression of the sickness of the South, generally, has been rapidly losing ground for some years back; and that blessing is now sought with as much confidence on the "swamp lands" of the Yazoo and the Mississippi, as among the hills and plains of Carolina and Virginia. Population of the very finest character is being attracted hither; and, in a few years, it must be the wealthiest and most flourishing part of Mississippi. When other portions of the State shall, in the lapse of time, become worn out and exhausted (as they will, unless our mode of cultivation is greatly improved), it will be the storehouse, the granary, the Egypt of the surrounding country. One

drawback on these lands, however, is their liability to overflow from freshets in the Mississippi river. This danger is diminishing every year, and as population increases, levees, good and substantial, will be built. An effort was made at the last session of the Legislature, to pass a Levee Bill, which failed, but which will be renewed with better success at the next session. Some years ago Congress donated to the State of Mississippi 500,000 acres of land, to be applied to purposes of Internal Improvement. Most of these lands are located within the district we are speaking of. Under an act of the Legislature they were advertised to be sold on the 1st of January last, by the Secretary of State, and Planter's Bank bonds and coupons to be received in payment therefor. There is a considerable quantity of Government land here also vacant, and selling for the minimum price. Very heavy tracts of land are here also held by speculators, whose necessities and our tax laws are forcing to sell. The natural advantages of these lands are appreciating them in value every year, and the present is probably the most advantageous period to purchase which will ever occur again. I may also mention that there are considerable quantities of these lands, owned by old Commission Houses, and foreign Banks, and no doubt could be purchased of them low.

The section last spoken of embraces the counties of Yazoo, Sunflower, Washington, Bolivar, Coahoma, Tunica, Tallahatchie, and a portion of De Soto, Panola, Yallobusha, Carroll and Holmes, and is generally known as the Region of the "River counties."

Mississippi can as yet boast of but few works of Internal Improvement. There has, however, for a few years past, sprung up a strong disposition to carry out something of the sort. The idea of connecting Memphis by a railroad, running through North Mississippi, with the Alabama, Georgia and Carolina road, has been broached and advocated through your Journal. The plan is feasible, and is, every day, engaging the attention of men who will accomplish their undertaking.

For several years we have had a Railroad from Vicksburg to Jackson. This road has long been graded twelve miles east of Jackson to Brandon; by an act of the last Legislature, our two per cent. fund, donated to us by Congress for such purposes, was appropriated to extending and completing this line to Alabama. Commissioners were appointed for the purpose, who are now actively engaged in so doing. The Road will soon be completed to Brandon, and if a small amount of foreign capital can be attracted to it, it will be completed, so as to connect with the Atlantic at Charleston. The recent addition of Northern Mexico to our Union, the immense mineral wealth, and the convenience of its ports and harbors, toward the rich trade and commerce of the Orient, render the question of a land connection between the Californias and the Atlantic a matter of pressing and glorious interest. It is, however, too important a theme to be discussed here. At an early day, if agreeable to you, I will take up the subject, and from an examination of a mass of papers heretofore before the United States Senate, lay before your readers a sketch of the different projects connected with the above.

There is one cause which at present I will mention as operating against the resources and population of Mississippi: is the heavy amount

of Government lands remaining unsold within her borders. By the Report of the Commissioners of the General Land Office, they amounted, on the 30th June, 1845, to 10,409,034 acres. Of these, there had been in market *five* years, 1,018,114 acres; *ten* years, 451,390 acres; *fifteen* years, 2,974,097; *twenty* years, 934,131; *twenty five* years, 894,424; *thirty* years, 2,924,172; and *over thirty* years, 1,222,706. These lands are all held at a minimum of \$1.25 per acre, at which price they can never be sold, and will remain a heavy incubus upon our prosperity. The subject calls loudly for the action of Congress, and was ably urged upon it by General Shields in the Report above named. Under the graduation system, of about 4,344,725 acres in nine years, was sold 3,469,320.92 acres, and the balance is, and will be soon disposed of. Every consideration demands strict legislation, economy, comity to the States in whose borders these lands lie, and justice to the mighty wave of the frontier population, sweeping onward to the base of the Rocky Mountains and the shores of the Pacific, and extending the laws and institutions of our country across the continent. The removal of all difficulties in the way of the occupancy of our public lands, has always been a favorite idea with me, and, in connection with it, I cannot here help alluding to a public man, whose official career is now nearly run—one whose untiring industry and unvarying accuracy, have made him famous, whilst his far reaching sagacity and comprehensive ability have shed a mighty flood of light upon all the financial and industrial interests of his country. I allude to Robert I. Walker, of Mississippi, and I cannot better conclude this subject, than by quoting his own language in reference to it. "Reduce," says he, "the price which the laborer must pay for the public domain; bring thus the means of purchase within his power; confine the sales to settlers and cultivators, in limited quantities; preserve thus hundreds of millions of acres for ages to come, as homes for the poor and oppressed; reduce the taxes by reducing the tariff, and bring down the prices which the poor are thus compelled to pay for the comforts and necessities of life—and more will be done for the benefit of American labor, than if millions were added to the profits of manufacturing capital."

There is much else which I could well allude to in connection with my State, but I am warned to conclude. I can only say, that, to my view, no State has fairer and brighter prospects before her in the future, if prudence shall rule the action of her people, and wisdom guide their counsels and conduct.

ART. III.—COMMUNICATION BETWEEN NEW YORK AND NEW ORLEANS,

PROPOSED NEW ROUTE FOR A DIRECT COMMUNICATION BETWEEN NEW YORK AND NEW ORLEANS, ACROSS THE PENINSULA OF FLORIDA.

Since the reception of the following paper, we have had an opportunity of conversing with senator Yulee, of Florida, who is an enthusiastic advocate of the measure it proposes, and who has taken an opportunity of bringing it before Congress. Mr. Yulee states, that considerable interest has been manifested by northern capitalists in the undertaking, and that some early steps with regard to surveys, &c., will be made. Certainly, nothing can be more important than the proposed connection, and nothing can be more immediately practicable, if

taken spiritedly in hand. The idea of bringing New Orleans and New York, these great emporiums, by a safe and pleasant medium of travel, within *four days* distance of each other, is worthy of the progressive spirit of the age, and is but another indication of the high destinies of our country. We shall be obliged to Mr. Fairbank, or senator Yulee, for further and more full particulars, and shall be happy to afford the review as a medium of their discussion.—Ed.

SINCE the acquisition of Louisiana, and the immense and increasing commerce which has its center of operations at New Orleans, a speedy and direct communication between New York, the great northern emporium of commercial interest, and New Orleans that of the south and south-west, has engrossed much of public attention, and has been constantly a matter of absorbing interest.

The first and most natural channel of communication, was by means of ship packets between the two places; and, for freight, this has continued the sole means of transportation. Until within a few years this was the ordinary, and still continues to be the usual, route of passage. The distance by sea is estimated at about 2,500 miles, or nearly as far as to Europe; and the length of passage from fifteen to thirty days.

By means of the steamboats ascending the Mississippi and Ohio Rivers, a new channel of communication was opened inland by steamboats, as far as Pittsburgh, and connected with Baltimore, within a few years past, by the Baltimore and Ohio rail road. This route, following the circuitous meandering of the Mississippi and Ohio Rivers, and ascending against their strong currents, although perhaps performed with greater comfort, is but little less in point of time than that by the packet ships.

The most direct route has always been through Alabama, Georgia, South Carolina, North Carolina, Virginia, and other States on the line of travel. Performed by stages, this was an exceedingly tedious, difficult, and expensive route, and was only used by those to whom time was an object. The gradual opening of railroads through these States has increased the comfort and dispatch of this route. It is now so connected, that but about one hundred miles of the journey are made by stages, and the remainder is traversed by steamboats and railroads. The most disagreeable feature of this route, at present, is the outside steamboat connection between Charleston, S. C., and Wilmington, about one hundred and fifty miles, in steamboats of very ordinary size and construction; the shallowness of the water upon the bar at Cape Fear rendering the employment of larger steamers impracticable. Another disagreeable feature is the rare connection of the different roads, and consequent transfer of passengers and luggage at the different termini, with day and night traveling in the cars, and but little opportunity for rest. The time within which the connection is made through to New York, is eight days; which may be abridged, perhaps to seven, when the one hundred miles of stageing is connected by railroad.

Within the past season, by the opening of the Illinois Canal, a new route has been thrown open by way of the great lakes, by which nearly the whole distance is performed by water, with an increase of distance, but an addition of comfort; this route being some three or four thousand miles, but not more expensive than the others.

The impulse given to commerce, by the introduction of ocean steam-

ers, although soon realized in this country, has not been acted upon until within the last three years; our dock yards have teemed with the rapid construction of ocean steamers. This mode of communication is evidently superior to any other yet made use of. Combining the greatest safety with the greatest possible speed, and under the influence of American enterprise, the steamship is becoming the striking feature of the present century; and with these upon the ocean, and the electric telegraph upon land, we are compressing the globe, by the rapid transmission of intelligence, into a thousandth part of its former compass.

An attempt was made, as early as 1820, to run a steamship from New York to New Orleans. A vessel, built by Messrs. Henry Eckford and David Dunham, of New York, named the Robert Fulton, made several trips; but it was found that her engines were not sufficiently powerful, and it was abandoned. Since that time, we are not aware of any thing worthy of the name of a steamship line, until within the past year. Messrs. Newton, Howard & Co., built the Crescent City, which proved, on her trial trip, that she was probably the fleetest steamship afloat, and that the distance between New York and New Orleans could be run in less than seven days, and in advance of the mail. The steamship Falcon has also been placed on the line, and others are being built. This is a new era in the communication with New Orleans, and its success has awakened new attention to the subject. The rapidity of the passages of the Crescent City is still a matter of surprise and gratulation. But since the successful issue of this route, the question has arisen, can the route be further shortened, and accomplished in less time?

It is well known that the project of a ship canal, to cut off the long and dangerous circumnavigation of the peninsula of Florida, has been talked of ever since the acquisition of Florida. Within a few years, several railroad routes have been suggested, terminating on different points and water-courses; and in the year 1845, a survey was made across the peninsula, from the St. Johns river to the Gulf, by Capt. Blake, of the United States Topographical Engineers, under the authority of government.

As these ocean steamers are enabled, even with the circumnavigation of the peninsula of Florida, which requires a circuit of nearly one thousand miles, to compete successfully with the mail line by railroad and steamboats, upon the most direct land route, it is self-evident, that if the distance to be traversed by them could be lessened, their length of passage would be shortened by that amount. A canal, or railroad, across the northern part of the Florida peninsula, would seem to afford the only prospect of thus shortening the distance. A canal is, for many reasons, impracticable; or, at all events, in comparison with a rail road, does not offer advantages commensurate with the increased expense. A railroad, then, which should enable these steamers to connect at each end, and avoid the circumnavigation of the reef, is the desideratum. The first question to be solved is, can harbors be found at the termini on the Gulf and Atlantic, having sufficient depth of water to admit steamers of that class? The next point is, the length and feasibility of construction, considered in reference to the distance saved. With these data we can form a correct conclusion in reference to the practical importance and bearing of any such proposed route.

We will proceed to discuss the topographical view of the matter. By a look at the map of the United States, it will be seen, that, commencing from a point due east from New Orleans, the peninsula and its reefs extend southerly about four hundred miles, the circuit of which is, of course, out of the direct line northerly, occasioning a loss of nearly one thousand miles. Upon the Atlantic side, in about latitude 31° , and a little north of the latitude of New Orleans, is found the harbor of St. Marys, ninety miles south of Savannah, having a depth of thirteen feet on the bar at its lowest tides, and some twenty-three at high tides. This is better than Charleston, and equal or superior to Savannah, and is amply fit to admit ocean steamers. On the opposite side, upon the Gulf, in a south-easterly direction, is found the harbor of Cedar Keys, where, it is believed, sufficient depth of water exists for a similar purpose. The distance from St. Mary's harbor, on the Atlantic, to Cedar Keys, on the Gulf, is about one hundred and forty-five miles; and the distance of Cedar Keys from New Orleans, about three hundred and seventy-five miles; while the distance of St. Marys from New York is not over eight hundred miles; thus giving a route, if practicable, of only thirteen hundred miles from New York to New Orleans, and much less by some hundreds of miles, than any practicable traveling land route.

The next consideration is, the feasibility of such a route and the cost of its construction. Upon this point it is only necessary to say that the larger portion of the route has been surveyed by the late Lieut. Blake, of the Topographical Engineers, and ascertained by him to be of easy and exceedingly cheap construction, as the route traverses principally an open pine country, very level, and intersected with no considerable water courses, and with abundance of timber along the line, suitable for its construction. The whole route, with all its appendages, ready for operation, it is believed, would not cost over two millions, if laid with a heavy T rail.

We will next examine the probable time within which the distance between New York and New Orleans could be traversed by such a route. The distance from New York, by sea, to St. Marys, by the usual route for vessels, is about seven hundred and fifty miles; St. Marys being but about ninety miles from Savannah. The Cherokee has, with ease, made her voyage to Savannah in sixty hours, and could readily make the voyage to St. Marys in sixty-five hours. By the rail road route proposed from St. Marys, on the Atlantic, across Florida to Cedar Keys, on the Gulf, a distance of one hundred and forty-five miles, five hours would place the traveler on the Gulf, and the three hundred and seventy-five miles to New Orleans could be run in thirty-five hours; thus giving one hundred and five hours, or about four days, as the running time from New York to New Orleans, and, including all detentions, in less than five days, even at the present rates of speed, which are constantly being increased; a shortness of passage, rendering all competition, by any other route, entirely out of the question. When taken in connection with the advantage of having only two transfers of baggage, and the superior comfort, convenience, and safety of traveling by sea steamers, would ensure for such a route, when established, nearly all the travel from New Orleans and the Gulf ports, North, Texas, Mexico, &c.

Would not such a road receive from the Gulf a large amount of freight for transfer to the Atlantic. The time and risk saved, the interest on capital, the accuracy with which commercial transactions could be carried on, would all be reasons pointing to such a probability. The numerous small vessels engaged in freighting cotton from St. Marks, Apalachicola, and Mobile, to New York, could be dispensed with, and the cotton carried by steamers to the Gulf terminus of the road, and thence transferred to St. Marys and shipped direct to Europe—that harbor being capable of receiving the largest class of merchant vessels. The local business of Florida would form no inconsiderable item of the business of such a road.

This subject is worthy of the attentive consideration of all who are interested in the prosperity and commerce of the southern States, promising, as it does, to bring New York and New Orleans within an easy four days' journey of each other, and almost following up the telegraph in rapidity. It has already attracted the attention of some of the leading commercial minds of the North, and efforts are being now made to carry this project into successful execution.

ART. IV.—COTTON,

AND THE ONLY PRACTICAL METHODS PRESENTED TO ITS PRODUCERS OF
ADVANCING AND CONTROLLING ITS PRICE.

THAT this country does now, and probably for ever will, possess the monopoly of raw cotton, is assumed. Great Britain has in vain endeavored to become independent of us, and has made fruitless experiments after experiments to encourage the growth of this staple in every part of her empire most favorable to its cultivation; the field of experiment has been unlimited, and the means used have been fully adequate to the object in view.

As long as children come into the world naked, so long is the cotton fabric likely to be of more extensive use than any other covering; until the iron hands of machinery are palsied, so long will civilized man put down all competition of bark, grass, furs, and even of wool, with his cotton garments.

Have we clothed all the shivering people of the north? Have we covered the nakedness of all who dwell within the tropics? By no means: a small proportion of mankind have just begun to rely on us, and the residue of our race have markets for us yet to be opened.

We alone, then, have a great staple, which may be made of universal use, and to the consumption of which no limit can be fixed.

But how shall we enlarge its consumption, and how regulate its value? *To do this effectually we must control its fabrication as well as its production.*

So long as we rely on cotton spinners and weavers, who are starving this year, fighting next year, and in all years are trodden to the earth by the tax gatherer and police officer, it is very clear that we cannot

effect the end in view. Neither shall we be more successful while we waste our substance and exhaust our energies in and about the costly machinery of exchange.

To undersell the *tapa* of the Pacific, and the fabrics made of grass and the fibres of the cocoanut and agave, we must sell cheap. The rich will buy the lawns at any price, but the masses require cheap sheetings. How shall the cost of these be lessened? What says the cotton planter? Is he willing to grow the material at rates cheaper than now? The starving operative of Europe declares that he can barely live on what he now receives as wages; the Manchester, Glasgow, and Lille mill owners, show a balance sheet indicative of a most unprofitable business; the sailor refuses to work at lower rates, and the shipyards of the country are now comparatively silent, because capital invested in ships does not pay.

Turn the glass whichever way he will around the present horizon, the cotton planter sees over-production and the fall in value of his staple. Even if he grows less cotton and more food and hemp, the food and hemp growers of Kentucky, Missouri, and Tennessee, deprived of a market for their staples, will send their slaves to compete with his in the cotton fields of the South. He has but one mode of relief. *His staple must be fabricated nearer home.* The profits of making the cloth must not be absorbed in the support of kings, queens, bishops, field-m Marshals, the paupers, soldiers and sailors, the mistresses of nobles, and the pensioners of the state in Europe. And how shall these expensive instruments be discarded? Perhaps the salvation of England depends on the present state of things. *The cheaper she can buy the raw cotton, the higher taxes she can impose on her people who work it up.* Her policy is always the same. The power of her government and of her monster bank has ever been, is now, and for ever will be, exerted to their utmost limit, that her imported raw materials shall be laid in at the cheapest, and that her manufactured commodities shall be sold at the highest rates.

Can the cotton planters, scattered over nine large states, ever expect to fix a uniform and satisfactory price on their staple by individual association. The history of individual combinations, formed to effect pecuniary interests, shows clearly the futility of any such movement.

There are but two methods now presented to the cotton planter for achieving his independence, and securing reasonable profits on his capital and a fair remuneration for his labor. Both are equally certain. The one would effect the result almost immediately, and the other in time. The one by legislation, and the other by the force of circumstances.

At the formation of our constitution, the South insisted on a positive prohibition of export duties. It was then evident that she was to be chiefly dependent on agricultural products, and she wisely provided that these products should be burthened with no domestic shackles, but be left free to seek the best markets of the world. But *then* the supply of these products was far less than the demand; *then* the South had no knowledge of her capacity to fabricate her own products; *then* she did not expect the settlement and cultivation of the country west of her for centuries; *then* human labor did the work now performed by iron

machinery; and *then* we did not, as now, control the whole cotton district of North America.

But circumstances have changed; we do now over produce, we can now manufacture. We are, in respect to industrial pursuits, situated as older countries have been, and we need not be ashamed to examine the lessons of national policy taught in foreign schools.

The general policy, the common usages of civilized nations, are generally based on the principles of equity and common sense. Now, if there is one principle that more than another has been acted on by every government, civilized and uncivilized, it has been that of making every possible profit out of any and every material and commodity over which it possessed the control.

Holland monopolized spices—Spain, quicksilver—France, silk fabrics; England put a prohibitive export duty on raw wool for a long series of years, and she even interdicted, under the most severe penal enactments, the exportation of mind until it had expended all its profitable results at home. For years the English inventor of labor-saving machinery was under a closer surveillance of the police than the felon; he could not leave home, nor could he send abroad the slightest description of his improvements.

But the instances of this policy are so numerous and well known, that it is needless labor to cite more of them. The policy remains the same in this as in preceding centuries, and is strictly followed by every country except our own. Our cotton planters could afford to be liberal, while their profits were ample, and until they had the means of realizing the profits of the mill, as well as those of the field.

The first method then proposed for consideration, is the calling for such an amendment of the constitution as will authorize the imposition of export duties, and, when this is obtained, the imposition of such an export duty on raw cotton as will ensure the fabrication of all *coarse* cotton goods at home; laces are for the rich, and, as they are more the product of human hands than of machinery, their material will bear almost any duty.

If the cotton planter asks for such a change, and such a law, both can be obtained. The food and hemp growers of the West, and the manufacturers and carriers of the East, would interpose no difficulties, but, on the contrary, aid the movement, when they understood its object.

Can any one doubt the result? Let the year 1865 be fixed as the period when the law advocated should take effect; will any one deny that, within the period named, cotton mills would start up, as if by magic, all over the country, and sufficient for the working up of the entire cotton crop, whatever its increase may be? Our own surplus labor would direct its attention to this employment and to its auxiliary branches of industry. The English, French, Belgium, Swiss, Prussian and Saxon cotton mills, would be gradually closed, and their spinners and weavers, by hundreds of thousands, would bring their tools of trade where they would be of use. Capital would follow this labor; we should have a home market for whatever is produced by our fertile soil, and the rich ores that now lie undisturbed beneath that soil; money would accumulate, because we should have ceased to send it abroad in large quantities for the necessities of life. Our exports of cotton

fabrics would be exchanged with China for tea, with Brazil for coffee, with Southern Asia and the Islands of the Indian Ocean for spices, with the West Indies for inter-tropical fruits, with Chili, Peru, Mexico and California for the precious metals. Our land would appreciate, our labor would be better paid, and our capital would yield larger returns up to the point at which the supply of the cotton fabric—the product of the combined surplus labor of the country—would reach the demand:

The South has but to will this thing and it is done. The result can be accomplished by ourselves in half the time named. The machine shops already in operation in the country, have the capacity of duplicating our own cotton machinery in five years; we now have the best teachers and in abundance, and we have spare labor enough for twice the number of mills required for our purpose.

But, although I believe the constitution and laws will eventually be so modified and framed, as to protect our home industry from the legislation and preponderating capital of foreign nations, I do not look for such a change of opinion among southern men as would result in affording us immediate relief by law.

I present, therefore, the other method, and append to it such statistics and calculations as may best commend it to the attention of the cotton planters, who are now investing their surplus capital in lands and negroes to make more cotton and a superabundance of that which is now superabundant.

Let the cotton planter look into the *modus operandi* of manufacturing cotton. An examination of the subject will show him, that less labor, capital, and care, is required in the fabrication than in the production of his staple; and that one bale of cloth will bring him more money, or more exchangeable commodities than five bales of his material. Let him employ the cheap and inexhaustible power and ores of the West; let him use cheap labor and skill at home, and invite both from abroad; let him encourage the building of ships out of our cheap timber, with fastenings of our tenacious iron, with rigging from our cheap hemp—to be provisioned with our cheap food, and to carry our own fabrics of cotton to the most remote consumers; let the cotton planter of the South, and the food and hemp producer of the West, unite in developing all the home resources that will tend to cheapen the production, the fabrication, and the transportation of the materials which should naturally be combined at home.

That the cotton planter may see the relative cost of producing and manufacturing the cotton, I give the following estimates. Of the fairness of the first, the planter is fully competent to decide. Of the correctness of the last, I have to say that it shows *actual results*. The mill, from whose books the items were taken, is of modern construction and has been running twelve months. Its operatives are chiefly new to the business, and its position is remote from machine shops, founderies, and other auxiliaries, and it is seventy miles by railroad from the city where its material is purchased and its goods are sold.

The cloth is the finished product of the labor and capital of the planter, the carrier, and the manufacturer and their respective adjuncts.

For convenience I take a mill of 10,000 spindles, making No. 14 sheetings, averaging $2\frac{3}{10}$ yards to the lb. The cloth sells in the mar-

kets of the central West at $7\frac{1}{2}$ cents per yard. I allow 6 cents per lb. for the cotton, good middling, and midling fair, which is higher than its present value.

The mill will employ 275 operatives, chiefly girls, and produce per annum 4,500,000 yards, at $7\frac{1}{2}$ cents.....	\$337,500	
Cost of cotton 1,800,000 lbs. at 6 cents.....	\$108,000	
50,000 bushels of coal, at 3 cents.....	1,500	
Carding (less waste) 1,650,000 lbs. at 0.804 cents per lb.....	13,266	
Spinning, " " " at 0.893 cents.....	14,734	
Dressing including starch at 0.564 cents.....	9,306	
Weaving including all expenses at 1.612 cents.....	26,598	
Repairs, including machinists, or wear and tear at 0.783 cents.....	17,002	
General expenses, including all officers, insurance, transportation, taxes, &c., at 1.251 cents.....	20,642	211,048
		<hr/>
		\$126,452

We may now deduct further expenses attending the operations of the mill owned by distant stockholders, and managed by paid agents.

Say salary of Treasurer.....	500	
Say 5 per cent. on sales, and guarantee.....	16,875	
Salary of local manager.....	3,000	20,375
		<hr/>
	Net profits,	\$106,077

The cost of mill.....	\$25,000
The cost of manager's house.....	3,000
The cost of tenements for 275 operatives.....	20,000
The cost of warehouse and store.....	2,000
The cost of 10,000 spindles and machinery complete.....	160,000
Working capital for over 4 months stock,..	40,000

Capital invested,	\$250,000	yields	\$106,077
-------------------	-----------	--------	-----------

COST OF PRODUCING 1,800,000 lbs. OF COTTON.

The fixed capital is the land, improvements and negroes. Sixty working hands are as many as can be profitably managed by an overseer. There will require 900 acres of good land. Let us take a model plantation on the Mississippi river, between latitudes 32° and 34° .

600 acres of land in cotton, at \$32 per acre.....	\$19,200
150 acres of land in corn, at \$32 per acre.....	4,800
150 acres of land in pasture and wood, at \$12 per acre....	1,800
60 working hands averaging \$650 each.....	39,000
Cost of gin, mill, dwelling and cabins.....	5,000
Cost of mules, oxen, carts and tools.....	4,000

Fixed capital in the model plantation.....	\$73,800
--	----------

Annual cost of operation—

Overseer.....	\$600
Clothing \$15 per hand.....	900
Deficiency of meat, sugar, coffee, &c.....	650
Medicine and attendance.....	200
	<hr/>
	\$2,350

The accretion of slaves is about balanced by deterioration of stock and improvements, abrasion of the river and renewal of levees.

There is an average loss on bagging and rope. \$20 per acre will be

regarded as a low cost of clearing land, and \$12 per acre for wild land is below its present rate.

The average produce per hand is not over $7\frac{1}{2}$ bales of 400 lbs. each.

Then the model plantation will yield per annum 180,000 lbs. of cotton, and ten plantations will be required to supply the mill with 1,800,000 lbs.

The aggregate of slaves to produce the cotton is..... 600
 The amount of fixed capital is..... \$738,000
 The aggregate cost of operating the plantation is..... 23,500

SUMMARY.

The gross product of the joint operations per annum is..... \$337,500
 Of this the fixed capital of the planter receives..... \$108,000
 Less cost of operating..... \$23,500
 Less carriage \$1 per bale..... 4,500
 28,000

Or \$738,000 yields..... \$80,000

The fixed capital of the manufacturer receives..... \$337,500
 Less cost of materials and of operating or \$211,048 plus 20.375. 231,423

Or \$250,000 yields..... \$106,077

The capital of the planter is nearly three times that of the manufacturer, and yet he receives the least portion of the profits. The 600 laborers get less than the 275. The planter has to look after ten overseers, on whom there can be but few checks. The manufacturer has but five overseers and these are checks on each other. The manufacturer is charged with the cost of a treasurer, who gives bonds for the faithful disbursements of the money he receives and of a manager whose high salary ensures the exertion of all his energies. They who are responsible to the planter may assign floods, winds, the worm, sickness of the hands, &c., as the reason of short crops; they who are accountable to the manufacturer can find few excuses.

Your readers will bear in mind that these estimates of the results of manufacturing cotton, are based on the supposition that the mill is located at a coal field on the northern bank of the lower Ohio, where power, food, and lands are cheap; where the climate will allow full work, to which eastern and foreign skilled labor can be attracted, and where a large part of the expenses of transportation can be saved.*

ART. V.—THE MISSISSIPPI SWAMP.

"VARIETY is the spice of life." I do not mean to insinuate that my piece will receive the merit of a spicy composition; I only wish to suggest to those of your readers, who dwell on the hills and contemplate with pleasure the beautiful scenery which nature has spread out before them, in the romantic eminences, gurgling streams, beautiful waterfalls, highly

* We give the views of our correspondent in regard to export duties upon cotton, without any comment now. We have, however, no prejudices against such duties which do not equally apply to those upon the imports of the country for which its exports are exchanged.

cultivated farms, and populous neighborhoods, with the stirring industry and active enterprise which characterizes them, to transfer their contemplations to the "vale beneath," and become interested by the contrast, if not from the intrinsic worth, of the region of country which flourishes under the above cognomen. It is not supposed that a name, in this instance, is indicative of the real nature of the thing. The term *swamp*, as understood from Webster, has a different meaning from the popular designation of the term, which custom here has sanctioned, and habit allows. To those who desire information of its character and location, a short description may not be out of place.

First, permit me to correct a very erroneous impression and very prevalent, in respect to the low lands bordering the Mississippi river, which will introduce us to the gist of this subject. The arable lands, or those suitable for cultivation, and for the purposes of organized society, are not confined, as many suppose when descending or ascending the river, to the lands immediately skirting the banks. The forests on both sides, in the rear of the plantations, would seem to indicate this. Like parallel lines they run up and down, and appear to the beholder to divide the tillable land from the morass, leaving him to infer that all beyond, where the trees are covered with moss, is not relieved by a single feature to extricate it from associations the most gloomy and unpleasant.

But enter just beyond this perspective, and there are flourishing plantations. You may continue your route for fifteen or twenty miles and the same interesting spectacle is afforded. The activity and industry of southern plantations is as much exemplified to this distance from the Father of Waters, as on its banks.

A stranger just entering the *swamp*, as it is termed, or the "back lands," is surprised with its beauty, its evenness, the winding roads leading by plantations of fine location, and in a high state of cultivation. Perhaps it may be spring, when all the land is robed in loveliness; or in the glowing summer, when the bright tints of richest coloring gladden in the sunshine; or in the golden autumn, when every hue is brightened and forest and field are ripe for the garnering: the lovely scenery which meets his eye, the luxuriant soil, and rich beauties, impress the mind so favorably, that he is filled with delight.

The road in its winding way leads along the bayous—one running into another, of sufficient width and depth to be used as canals, which traverse the country in every direction—then along the banks of some magnificent lake, which spreads out for miles, affording an enchanting view of the verdant fields and tall, black forests. You then reach a river of fine proportions, bold current and high banks, but of tortuous course, offering excellent advantages—carrying the rich products to the mart, and giving the privileges of the bold Mississippi in miniature. Then is seen the indications of a fine estate; its neat dwelling house, and neat flower garden in the front, with the rose of varied hue and odor, and violet and jasmín; the grapes, &c.; the walks arranged with tasteful grace, with bower and alcove manifesting the taste of the projector and proprietor. There is the gin house and mill, and the large pastures where the horses and cattle and sheep promiscuously feed, the "quarter," and maybe the "chapel," and other of the arrangements of a large planting interest.

Scattered here and there are numerous mounds of various height and width; objects of great curiosity—the cemetery of the savages who once lived and roamed as lords of the land.

Nothing can attest so fully the energetic character of our race, as the improvements and cultivation which are seen everywhere in the lowlands bordering the Mississippi river, or in the *swamp*. By the wholesome influence of municipal law, this whole country is bordered by levees, which to a great extent protects it from inundation. Very little of the land but what is secured, and the inhabitants live as peaceful, and nearly as free from care, as it respects an overflow, as if they were living on some eminence.

What has time and industry effected? A few years since, it was considered quite an adventure to remove, and an exhibition of great heroism to reside here. Now many families have made it their permanent residence; many who were to the *manor* born, as well as in the more humble walks of life; and they have beautified the wilderness, and caused refinement and elegance to spring up, while religion and literature have not been neglected.

The health of the lowlands has been impeached. Many who are pleased with its rich soil and bountiful products, are fearful of its healthiness. Its level character, its bayous and lakes, have excited their imagination, and the miasma which is supposed to arise from them, to infect the air and produce disease. This consideration first prevented emigration, even when the barriers on the Mississippi were sufficient to prevent overflow, and even now how many suppose that it is

“A land of carcasses and graves—
One dreary waste of chains and slaves.”

But if experience can attest to the truth of this matter, surely we say that the health of this country compares favorably with that on the hills; and indeed, it is considered by many superior. *Unprejudiced* persons who have resided on both have declared this. But, we may with reason conclude that, as the country advances in age and prosperity, and comforts more generally abound (the products of prosperity), we may anticipate a greater freedom from disease, and to rival *then* our neighbors of the hilly country.

Society is conducted on the same principles here as in the older settlements of the country: respect for the laws of the land, respect for religion, an increasing interest in the establishment of schools and other appliances to develop the talent of our citizens, and render them applicable to the various pursuits of refined life. We cannot, of course, boast the advantages of our neighbors who are situated in regions where learning and religion and refinement has existed from time immemorial, and who reside on the high dry land where there are no obstacles, such as bayous or lakes or rivers, to prevent interchange of civilities, or learning from each other “manners as they rise.” Possessing now a population of industrious and enterprising citizens, endowed with the principles of genuine hospitality, of sweet and fascinating frankness, and who by that free heartedness, and proud thought, and just appreciation of the blessings surrounding them, prove themselves worthy their heritage, we may look forward to the future in hope that, in every respect, improvement shall mark our progress, that we may enjoy all the ameliorations which relig-

ion and literature produce, and all the comforts and advantages which follow a dense society and a diligent attention to that important branch of agriculture, so actively pursued in the sunny south.

Hopewell, Tensas Parish, La.

ART. VI.—SUGAR.

MINT OF THE UNITED STATES, }
Philadelphia, Feb. 5th, '49. }

TO PROF. J. D. B. DE BOW:

Dear Sir—Herewith, I send you for publication in your Review, a copy of a letter, dated 1st August, 1848, addressed to me by N. Rillieux, esq., of your city, together with a translation of a pamphlet by Mr. Degrand of Paris, published in 1845.

I also inclose the successive articles of a newspaper controversy, extracted from the New Orleans Picayune, and handed to me by Mr. Rillieux; leaving it, however, entirely to your own judgment and pleasure, whether or not they should be reprinted.

The circular to which Mr. R. refers, and which gave rise to said controversy, is contained in your Review for March, 1848.

It was, I believe, the wish of Mr. Rillieux, that I should embody the papers accompanying his letter in a second edition of my reports, now in press; but they have appeared to me too controversial to justify their insertion, or more than a reference to them, in a document printed by order of the United States Senate. I have, therefore, concluded to send them to your Journal; in which they may find an appropriate place, as well as any criticisms they may call forth.

Of Mr. Degrand's pamphlet, I have elsewhere, though less explicitly, given my opinion, that it is the production, rather of an interested inventor, than of an impartial and scientific engineer. It will, however, be interesting to many of your readers; some one of whom may find time to point out the errors it contains. For my own part, I must forbear to pay attention to the sugar industry, that I may prosecute investigations more purely scientific with undivided and constant devotion.

Very respectfully,

your obd't serv't,

RICH'D S. M'CULLOH.

Philadelphia, August 1st, 1848.

R. S. M'CULLOH, Esq.

DEAR SIR—I have learned that another edition of your report upon Cane Sugar is to be published, under your direction, by order of Congress. There are some inaccuracies in that report to which I beg leave to call your attention, so that they may, if you see fit, be corrected in the forthcoming reprint. A brief history of the progress of boiling sugar by vacuo in France, may serve to point out some of the errors referred to in their proper order.

In 1821, or '2, the first vacuum pan was set up in France. It was heated by the direct application of fire, and the vacuum was maintained by an air pump worked by horse power. It was a complete failure.

In 1831, Roth introduced his first vacuum pan with large condenser. After some years it was found necessary to apply thereto an air pump worked by a small steam engine. Finally, Roth's large condenser was dispensed with, and his apparatus became a common Howard pan, using high pressure steam. Since that time, all the vacuum pans in France have been heated by steam of high pressure, instead of low steam as used in England. Until recently, the French pans were of small size, mak-

ing frequent small strikes at intervals of twenty or thirty minutes. In 1844, they began to use pans of larger size, and suitable for graining the sugar in the pan, but they still adhere to the injurious practice of using high steam.

I come now to my apparatus for making sugar, the invention of which I am prepared to trace back to January or February, 1832, by the testimony of gentlemen of the highest standing in Louisiana. In 1834, a part of my invention was described to Derosne and other persons in France; and subsequently, my idea of boiling one vacuum pan by the vapor from another, was conveyed to him by persons who can be traced. [See Note.] In 1843, Derosne made a trial of the last idea in such a defective manner as to show plainly that he did not comprehend it. Mr. Dumas, in the sixth volume of his *Chemistry*, gives a drawing of that apparatus tried by Derosne, which you have copied in your report and stated to be the same you saw in operation in Cuba, on the estate of Don Villa Urutia, and on the Amistad estate near Guines, owned by the widow Ayesterau and her sons. I have recently seen all the apparatus set up by Derosne in the island of Cuba, except that of Don Contero; and none of them use the steam of one pan to boil another. I afterward saw Don Contero, in Havana, and he informed me it was not so used in his apparatus. Don Ayesterau told me that, when you visited their plantation, he had only *one* vacuum pan with a Degrand condenser. The next year, he bought a second pan, a plain Howard pan, using a pumping engine and injection. On that estate, they now have one vacuum pan with Degrand condenser and pumping engine, to boil to syrup of 28°, and one plain Howard pan and pumping engine to make the strike; both pans being supplied with high pressure steam direct from the boilers.*

Don Ayesterau told me he wished to use tigers, but that he could not granulate in his pan, and must, therefore, procure either a large English pan or one of mine. At Don Villa Urutia's, they have two Degrand pans; one for syrup, and one for the strike. At Don Diego's, two open steam pans for syrup, and one Degrand pan for the strike. At Don Arieta's, two open steam pans and one Degrand pan, to make the syrup, and one Degrand pan for the strike. The whole of these pans are heated by high pressure steam direct from the boiler. At Don Soulieta's, the last and largest, and the most improved apparatus set up by Derosne in Cuba, there are two open steam pans and two Degrand pans, to make the syrup, and one Degrand pan for the strike, a pumping engine of the size formerly made by Derosne for each of the two first pans, and one of larger size with condenser and injection for the strike pan. There is also a Degrand condenser, for condensing the steam of the two grinding engines. The whole five pans are supplied with high pressure steam direct from the boilers.

The quality of the syrup made on all these estates by the Degrand apparatus (as made by Derosne), is precisely the same as that made by the open steam pans. The great defects of this system (as made by Derosne) are the use of high pressure steam and of vacuum pans of too small size.

* As the only notice of that apparatus is the one in Dumas's *Chemistry*, and as Derosne has never applied the same idea to any of the apparatus made by him since, it is certain that he did not succeed at all. N. R.

I hand you, herewith, a publication by Degrand, in which he asserts and proves that Derosne, so far from improving the apparatus invented by him, has actually injured it by his modifications.

Derosne also attempted to deprive Degrand of the credit of his invention, but the Royal Court of Paris recognized his rights, declared him to be the only and true inventor, and ordered Derosne, under a heavy penalty, to take off his own name as inventor from all the apparatus he had made and substitute "Degrand inventor," in large letters. In justice to the inventor, I suggest that you record this fact in your report.

I also hand you, herewith, a statement in tabular form, showing the comparative results of different methods of making sugar in Louisiana. It is difficult to get precise data, because the planters are averse to making their operations known. I was, therefore, in some cases, compelled to get my information from persons employed on the plantations. The general correctness of the statements may be inferred from the fact, that only two of the planters have made any objection thereto. One, Mr. Valcour Aime, and his engineer, objected to the statements in the report, and I refer you to a newspaper correspondence from which you may judge of the merits of the case. The other, Mr. Osgood, briefly denies in general terms the correctness of the statement respecting his crop. He was requested to give the data to enable me to correct the table, and refused to do so. I have, therefore, taken some pains to inform myself about the matter. I have obtained from persons on his plantation the following statement of his crop:

Sugar made	- - - - -	650,000 lbs.
Fuel consumed:		
" wood	- - - - -	1,300 cords.
" bagassa, from year before, equivalent to	-	550 "
" coal, 2,000 barrels,	" "	400 "
		<hr/>
		2,250 "

I could not ascertain whether the quantity of sugar given was the total product of first and second sugar, or first sugar only. I believe it was the whole crop; in which case there would be about 470,000 lbs. of first sugar and 180,000 lbs. of second sugar; which gives a consumption of 4.78 cords of wood per hogshead of first sugar, instead of $4\frac{1}{2}$ cords, as given in the circular.

If the weight of first sugar was 650,000 lbs., then the consumption of fuel was 3.46 cords of wood per hogshead of 1,000 lbs. As to the price of his sugar, I stated that his molasses sugar sold for $3\frac{1}{2}$ cents; this was a mistake; it was the molasses sugar of his neighbor, Mr. Johnson (sold by same merchant), which sold for that price. He succeeded in selling about one-half of his crop in New Orleans, at 6¢; but to keep it at that price, he was compelled to send the balance to Mobile, where it was sold at the same rate; thus netting Mr. Osgood, at New Orleans, about 5¢—say an average price of $5\frac{1}{2}$ ¢ for the whole crop as given in the circular.

N. RILLIEUX.

NOTE.—In December, 1831, or January, 1832, I visited the estate of T. A. Morgan, Esq., in Louisiana, and proposed to build one of my apparatus for that gentleman. He had made up his mind to have a common vacuum pan for his next crop, and declined my offer.

In January, same year, I was in treaty with Mr. W. Freret for the same purpose, and with the same result. Finding that the planters were not yet prepared to adopt such an improved apparatus, I set up at my own expense, in November, 1832, on the plantation of Mr. Cucullu, some open steam pans, to show to the planters that steam could be used for evaporating cane juice. I was compelled to take it down before trial, because it happened to be in the way—and it was deemed absurd to believe that the cane juice of Louisiana could be boiled by steam.

In the beginning of 1834, I was in treaty with another planter of Louisiana, who brought his overseer to my office to see the sketch of my apparatus, since patented. This overseer soon after went to France, and there saw Mr. Cail (afterward of the firm Derosne & Cail), to whom he explained what he could recollect of the apparatus I had shown him. He did not believe it to be my invention, and supposed that it was from Paris, and that Cail knew all about it, being engaged in making sugar machinery. Cail told him it was new, an excellent idea, and that he had a vacuum pan already made to which he would apply it, and desired him to call in six weeks and he should see it carried out. The pan, with the improvements, was sent to the National Fair of Paris, in the beginning of July, where it was seen by Degrand, who had invented and patented the same thing in 1833. He entered suit against Derosne for infringement of patent, but the matter was settled by compromise, in which it was agreed that Derosne should be the assignee and only builder of the patent apparatus for the north of France and the colonies, with the condition that he should pay to Degrand a fixed sum as patent charge for every apparatus he made.

In 1835, I set up one of my complete apparatus at the expense of myself and others concerned with me, on Z. Ranson's estate, Parish St. Charles, La., which was taken down without trial and before completion, because of the death of one of the persons associated with me in the experiment. The sugar maker engaged to operate with this apparatus, described to Derosne and his other friends, in France, my idea of boiling one pan by another; and in 1843, Derosne made a trial of that idea in such a way as to give positive proof that he did not understand it.*

N. R.

ART. VII.—TRUE SECRET OF AMERICAN WINE MAKING.

HAVING formerly, at some length, treated, in your valued periodical, on vine culture, I offer you now a few remarks on the true secret of successful wine making in our country, and especially in *southern vineyards*. And, in so doing, I shall have reference to certain remarks of Mr. N. Longworth, of Cincinnati, Ohio, in a letter of his, in Burke's Patent Office Report of 1847. Mr. L. combats the opinion of the American Institute, that the grape is a certain crop, and that the Scuppernon is a superior grape for either the table or wine. He further remarks, that Mr. Adlum, and others, put too much sugar in wine made with the addition of that ingredient only. That I have not misrepresented Mr. L's position any one may satisfy himself, I think, by reading his letter. That Mr. Longworth deserves great credit for his enterprising spirit, in turning some of the banks of the Ohio river, like those of the Rhine and other European rivers, into vineyards, and for making more wine, annually, than any vintner in our Union (three hundred barrels in one year; my product, as next highest, being about fifty barrels, only), would appear from his letter, and from others in the Patent Office Report of 1845. But so much the more dangerous any erroneous opinions of his, tending to discourage the vineyard enterprise,

* The remaining papers, referred to by Professor M'Culloch, will appear in the next number of the Review — Ed.

coming from so high an authority. For, if true that the grape is an uncertain crop (in our southern country, particularly), and successful *one* year in *four*, only, and that the Scuppernong, the greatest of grapes for yield, and reputed excellency every way, is inferior for fruit and wine, and that Mr. Guignard's pound of sugar per gallon is too much, notwithstanding he lost the greater part of his wine by turning sour, then, I say, who, in the South in particular, would undertake the vineyard business?

But suppose a full crop of grapes, every year, is expected, or two thousand gallons per acre, as the Scuppernong is capable of yielding, and, through an uncertain process of making, most of the wine is spoiled, as was Mr. Guignard's, through, I venture to say, his *too small* quantity of sugar—who would think it desirable to make a large crop of grapes? And whatever may be said of making a very small quantity of wine, *dry* or *wet*, by shriveled or half dried grapes, as I have done, I am bold to assert that the position, that an American vineyard can ever be made profitable, without any safe-keeping, enriching ingredient whatever, added to the grape juice, is *altogether chimerical*, or *Utopian*. Efforts to make good wines as a crop, in the teeth of European and other experience of ages, will issue in *utter failure*. Suppose, for a moment, that European vintners of Port, Madeira, and Malmsey wines, should cease now from what they have been doing for ages, viz., adding one-third spirits to their wine, how long would their wine reputation, and business last? How soon would the highly reputed medicinal, and other superior qualities of these wines, cease to draw annual millions from our country.

Mr. Longworth himself advises southern vintners to add one-third brandy, or spirits, to their vine juice, if designing a brandied wine. But how much sugar, I emphatically ask, is equivalent thereto, if a sugared, or sweet wine is designed? I say, from chemical knowledge and experience, *three pounds* per gallon, *at least*. Where, then, is the consistency of saying, that Mr. Adlum and others put too much sugar in their wines? And no mean judges of foreign, as well as American wines, in our State capital, Raleigh, consider my Scuppernong Hock—made with three pounds of doubly refined sugar, as the only enriching, safe-keeping ingredient—the best wine anywhere found in market. It commands four dollars per gallon, readily. My Scuppernong Champaign, made with a fourth spirits, and a pound of sugar per gallon, sells at two dollars. Common brandied Scuppernong brings one dollar per gallon, or that made with about one-third spirits, only, as Mr. L. recommends. So that the Scuppernong grape is capable of making wines of all grades of excellence.

And that it is the very best of grapes would appear from this, if no other circumstance, that of the many guests visiting my establishment, paying entrance fee, and buying grapes to carry away, the Scuppernong is preferred to all others by ninety-nine out of a hundred; though I have about two hundred varieties of grapes, and among these the most approved by Mr. L. himself; as the Catawba, Herbemonts, Madeira, &c., &c. Indeed, Mr. L. reasons as erroneously in identifying the Scuppernong with the Muscadine, as if one should deny the famed excellence of a certain peach, because of its being of the same species

as another tree of inferior fruit. And so certain is the grape crop here, that I have not known any failure, save one, for about twenty years, and that was last year, a very partial one of the Scuppernong. Some years since there was an almost universal failure of fruit in the United States, through late spring frosts, but there were abundance of grapes notwithstanding. About two years before, having sent Scuppernong vines to Mr. Noyes of or near Natchez, Miss., I learned from him that his Scuppernong vines bore finely that year, and was almost the only fruit in his region, and that they were esteemed most excellent. And further, that the bottles of Scuppernong Champaign I had inclosed in the box of vines were pronounced first-rate, by the best judges at Natchez and in the vicinity.

But to return from these digressive remarks connected with the main subject, I repeat the position, that the grand secret of making American wines, never to disappoint the vintner in his hopes of success therein, is to put in *plenty* of safe-keeping, enriching ingredients, of a pure healthful nature, as sugar and spirits, or both. Spirits add their own bulk to the volume of wine, and sugar adds half its bulk; so that two pounds or a quart of sugar, adds to the quantity of wine one pint; and that pint sold at one dollar per gallon, pays well for the sugar. Doubly refined sugar, at twelve and a half cents per pound, doubly pays for itself in wine, when the latter sells for four dollars per gallon. True, alcohol is the purest preservative substance in nature, and, through a kind Providence, pervades (as distillation shows) all the vegetable creation for the good of man.

Mr. Longworth repeats an adage that, "a *poor man* cannot make good wine;" yet his letter states that he, the *rich man*, put some *poor* German emigrants in the way of making *good* wine and a profitable business of it, on the banks of the Ohio, near Cincinnati. How long this will continue the case with his Catawba, so prone to rot, and the older the vines the worse, and with his Eutopian recommendation to make dry wines with no safe-keeping or enriching ingredients, to suit the artificial foreign formed tastes of eastern connoisseurs, I cannot divine. But it seems he begins to *complain of uncertain crops*. This as it may be; my object is to set forth an American system of vinyard business, that may eventually and measurably at least, meet the wants or calls of American citizens for good and unequivocally healthful, unadulterated American wines, so that we shall not always be dependant upon foreigners for annual millions worth of an article that we are capacitated by climate, soil, and in all respects, to make ourselves. My vineyards are now becoming profitable, and as an item of their profit, I state that I made the present vintage about fifty barrels of wine, none of which I expect to lose by spoiling, and which I calculate to sell at a good price, as I have preceding crops. I have sent my wines to various sections of our Union, in bottles or in casks, and the concurrent testimony in their favor is, that they are preferred to the *foreign*. One advantage of my system of wine making, and not a small one, to the *poor man* at least, is, that the wine is fit for use and market directly; and, connected with that circumstance, is another—that the wine, with plenty of pure, safe-keeping ingredients, not only is not apt to spoil, but keeps improving with age, by having the stamina or *capital* to improve on.

One mode for a vintner to keep improving annually in his art of making wine, I will name ere I close this communication. This mode I have practiced with happy effect for a few years, viz.—to put down in a record book, all essential or important particulars respecting the making of any one cask of wine, as when and of what made, quantity, and kind of enriching and safe-keeping ingredients, &c., &c. And to that cask attach a label with the number of the cask thereon. This label transferred to another cask, into which the wine is racked, designates the wine. By turning to his book the vintner is never at a loss to learn, from the *past*, wisdom for the *future*. For instance, in my own experience this year, my casks run up to number fifty-six, containing various quantities, from say fifteen to seventy gallons each. And No. 1, in my book, reads like this:

"No. 1.—Made July 10th, of *green grapes*, plucked from ends of branches, cut off from Catawba, Isabella, and other kinds prone to rot, to prevent those grapes left from rotting. These green grapes were mashed in my machine, and spirits put into the mashed ingredients, to the amount of at least a fourth per gallon. The whole was left to ferment from Saturday night till Monday morning, when it was pressed off; strained, while running from the press, through folds of woollen blanket; then two pounds of common sugar were added—two pounds besides spirits, for more ingredients are necessary for green grapes—and then turned into a cask. Quantity, thirty-three gallons; color, faint red; racked July 18; August 5th, fined it with six whites of eggs; result, a good sweet wine. Sold the barrel for \$33, at Louisburg, N. C., August 7."

I select another sample from my records of 1847, viz:

"No. 13.—Made October 1st, of white Scuppernong grapes, except one and a half bushels of black Scuppernong grapes, to give a color by fermenting. Grapes mashed by the machine, and mashed ingredients left to ferment forty-eight hours; weather cool. Pressed and strained, and to the twenty gallons of purified juice added sixty weight of doubly refined, pulverized sugar. Racked the wine several times, and a beautiful and first rate bright red wine the result, called Scuppernong Hock, which was sold at Raleigh for \$4 per gallon."

My Scuppernong Madeira is made pretty much in the same way, except it is not fermented till after it is turned into the cask and sugared. It is colorless, or of all white Scuppernong, and brings me three dollars in the market. The Scuppernong Champaign brings two dollars, and is made with a fourth pure spirits and one pound of sugar per gallon.

In haste, yours,

SIDNEY WELLER.

Brinkleyville, Halifax Co., North Carolina.

ART. VIII.—SLAVERY IN THE NEW TERRITORIES.

The following paper was prepared by an able southern jurist, who declines for the present, that his name should be made public. We commend the argument to the whole South.—Ed.

THE advocates of the Wilmot Proviso belong to several classes of the people, distinguished from each other by very different characteristics. Many come from among the waiters on popularity, who believe there is sufficient strength in the question to obtain for them offices and the spoils of victory, to which their statesmanship gives them no claim.

Some are driven, by the fear of its power, into the service of the fanaticism which raised, the exciting question; and others are restrained, by their apprehension of the phrenetic influence, from making open opposition to the Proviso, and direct their efforts solely to the object of avoiding a decision of the question. Persons of the last mentioned description equally dread to incur the final condemnation of their own consciences or the displeasure of the disturbers of the country's peace. They are in effect the supporters of the Proviso. The advocates of it are encouraged to hope for the aid of the undecided and wavering at some future time, and consequently to persevere in their efforts to keep up and increase the excitement, which threatens, unless it be speedily checked, to pervade the whole Union.

The feeling and ignorance from which the question arose—the influence and motives by which the supporters of the proviso have been enlisted—and the number of them may be increased, and by which, also, the opposition of the intelligent and patriotic in many quarters has been silenced or paralyzed—are all unfavorable to a correct interpretation of the constitution, and a just judgment of reason upon the angry controversy.

While the Provisoists profess to believe that Congress has constitutional power to prohibit slavery in any territory of the United States, they admit the exercise of it in California and New Mexico would be unnecessary, because they affirm slavery had been previously abolished in these territories, and was prohibited by the laws of the government, which, they say, existed in them both, at the date of the cession to the United States; and that the prohibition must continue in force till it shall be annulled by competent authority. If there be such a prohibition, the effect of it should be determined by the constitution, the treaty, and the law of nations. If by the authority of these the prohibition is in force, a judgment of the highest tribunal of competent jurisdiction in favor of the obligation of the prohibition would settle the question. A judgment on either side, would be considered, by the slave-holding States, as decisive and final. These States deny that Congress has power either to authorize or prohibit slavery in a territory. If the power belonged to Congress, it might be exercised as a State may exercise it, either to prohibit or authorize the relation of master and slave. If slavery be not now authorized in California and New Mexico, these States admit there is no power to establish slavery there. The power to do so, will come into existence hereafter, and belong to the State or States which may be founded in these territories in future, and admitted into the Union. Till States may be established there, the exemption of the territories, if it exist now, from the institution of slavery must continue.

If the Provisoists have faith in their published political creed upon the subject, that there is a legal prohibition in full force in these territories, which must continue to be a law until it may be repealed by competent authority, there ought to be no such controversy as the existing one between them and the inhabitants of the slave-holding States. After the facts shall have been ascertained, the only questions will be of a legal constitutional character; and the authority to decide them does not belong to Congress, but is vested, by the constitution, in the judicial department of the government of the United States. If the question were,

as to the effect of a supposed Mexican law, of either territory, which could operate only on individuals, would any representative of a State in the Senate, or of the people in the House, incur the forfeiture of his reputation for a proper sense of impartiality and justice, by making an attempt to induce Congress to express an opinion favorable to either side? *All* could and would see, that the controversy involved a legal question, which ought to be decided, unless it should be abandoned by the parties, by the exercise of judicial authority. If the alleged prohibition exist, the actual question is, can it operate in the territories consistently with the constitution of the United States? If it cannot, it was annulled by the cession, because the prohibition was repugnant to the constitution. This question relates not only to the conflicting interests of persons, but to the relative political power, also, of the slave and non-slave-holding states. But, although it may affect the relative power and supposed adverse interests of different sections of the Union, yet as it is a constitutional, and therefore a legal question, it is as exclusively within the jurisdiction of the Courts, as if individual parties only were interested in it.

The rights and interests of the citizens and other inhabitants of the States, included in the different sections of the Union, are involved in this controversy. If it should be determined that the alleged prohibition does exist, and has the authority of law, the claim of slave-holders to employ their slaves in the territories, where many of them believe they could increase the comforts of their bondmen, and derive greater profits from their labor, would be destroyed. The effect of such a decision would be to deprive many masters of their right to migrate and establish themselves in the territories, as their attachment to their slaves would prevent them from residing where they were prohibited from settling any member of their families.

The capacity to distinguish between right and wrong, which would penetrate without difficulty any disguise intended to conceal the odiousness of an attempt to induce Congress to express the opinion of that body upon a legal question involving only the rights of individuals, ought to perceive the gross impropriety there would be in the expression, by Congress, of an opinion upon a question of the same character, raised in a case of the greatest importance, and involving not only the conflicting interests or claims of citizens of different States, but of different sections of the Union—each composed of many States.

If the Provisoists assert the existence of the prohibition contrary to their belief of what is true, and the obligation of it in opposition to their judgment, they act unworthily, and for the purpose of misrepresenting the conduct of slave-holders, who are thus made to appear to claim the right to settle slaves in territories, the laws of which, as the Provisoists affirm, prohibit the institution of slavery. The advocates of this opinion betray their own want of confidence in it, by their repeated and clamorous efforts to induce Congress to enact a law to prohibit what they assert the existing laws of the territories forbid now and have long prohibited.

In some brief remarks, which Mr. Berrien made in the Senate of the United States, on the third of March last, he correctly stated, that, according to the law of nations, the laws affecting the relation of individuals

in a ceded country, continue in force after the cession; but those which affect the relation of the people to the sovereign, cease with his dominion who transfers the country to another sovereign.

As slaves are made by the constitution of the United States a part of the basis of taxation and of the representation of the people in the House of Representatives, he took the position, that a Mexican law which prohibited slavery in the territories before the treaty, was political in its character and ceased to operate there immediately the cession was made, because the relation of the inhabitants to the Mexican sovereignty was terminated by the transfer of the territories to the United States.

As the people are our only sovereigns, the inhabitants of the territories, at the time of the cession, were placed by that act in their present relation to the American sovereigns, and the constitutional law of this new relation, authorizes the inhabitants of the ceded country to own and hold slaves there, because the constitution recognizes the right of the citizens of any state, if a majority of them should determine, to allow it to have property in slaves and to hold them. The citizens who may found in future any state in the territories, will have the election to abandon, or to exercise, the right of owning and making slaves a part of the basis of the taxation to which their state may be liable, and of her representation in Congress. Every territory has the constitutional right to receive within its limits and protect all persons who may lawfully constitute a part of the basis of the representation of a state, and property of every kind which the constitution allows to be included in the basis of taxation. Congress cannot foresee that the inhabitants of any territory, when they may act as citizens of the United States in establishing a state, will not prefer to make slaves a part of her basis of representation and a source of her wealth, which may be charged with direct taxes for the use of the General Government. The will of the people in relation to the matter, cannot be controlled, when, as citizens, they may found a state on the territory they inhabit; and every person, or subject of property, they might prefer to retain in their state, if they had been previously in the territory, they are constitutionally entitled to receive and hold in the territory, that they may exercise, at the proper time, their election—to which they have a clear and perfect right, either to keep and preserve within, or exclude from, the limits of their state, any persons or property they constitutionally may. Congress has no power to legislate for the purpose of controlling this election—none to prohibit slavery in a territory—as the probable effect of such a prohibition would be, to induce the inhabitants, when they founded a state, to continue the prohibition; and none to authorize slavery—the existence of which would tend to procure the establishment of the institution by state authority.

The opinion seems to us to be absurd, that Congress has power to close, in a territory, any source of wealth or of political power—as the inhabitants, when they take rank as the citizens of a state, may think such source would be, and which the same territory, when organized as a state, would have the unquestionable right to open. Congress has no power, with the view of procuring the establishment of the institution of slavery, by the authority of some state which may arise hereafter in the territories, to require by law, that of the immigrants, who may annually establish themselves there, one-third, or any other proportion of them,

shall be slaves. The want of power is equally clear to prevent, by an act of Congress, the settlement in the territories of slaves, and of families consisting of free white persons and of slaves. The effect of the Wilmot Proviso would be to prevent the establishment in the territories, of many families, some members of which are the owners of slaves.

The constitution of the United States requires, "that representatives and direct taxes shall be apportioned among the several states, *which may be included within this Union*, according to their respective numbers; which shall be determined by adding to the whole number of free persons, including those bound to service for a term of years, and excluding Indians not taxed, three-fifths of all other persons." The fact is indisputable, that the persons, for the representation of three-fifths of whom the constitution provides, were slaves. Slaves were held in every state of the Union when the constitution was adopted. The constitution contains not only a recognition of slavery in every state, which was then in existence, but a prospective recognition of it in every state which might be formed and admitted into the Union in future. The constitution gives no authority to Congress to interfere with any state—or any people, when they may be engaged in founding a state—in the selection of the persons the citizens of the state may prefer for the basis of her representation and taxation; but the constitution does require all the persons mentioned in it, to be enumerated in every state where they may be found, and according to the directions in the constitution for the purpose of ascertaining and fixing the number of representatives to which each may be entitled at every apportionment. The rule for the apportionment of representatives and direct taxes, is applied by the constitution which established it to all the States of the Union, regardless of the time of the admission of any. It governs the first apportionment to a state as well as every subsequent one; and *the first apportionment*, therefore, of every new state.

The constitutional right of a new state to have slaves as well as free persons enumerated according to the constitution, at the first apportionment made for her, involves the right also, in the inhabitants of a territory on which the new state may be founded, to hold slaves—because the right of the same persons as citizens of the state could not be exercised at the first apportionment, unless this right had been previously enjoyed by them while they were the inhabitants of the territory. The effect therefore of a denial of the right of the people of a territory to hold slaves, is a denial of the right of the same people, when they may establish a state, to have slaves enumerated according to the constitution at the first apportionment of her representatives. To prohibit slavery in a territory before the inhabitants have the power of the citizens of a state to exercise their own will, and decide for or against the institution, would be to render that will, if it should be expressed at the proper time in favor of slavery, ineffectual at the first apportionment for their state—because the prohibition by Congress would prevent the existence in the territory at that time of the persons whom the new state might prefer for a part of the basis of her representation and taxation.

There is an obligation on the United States, the effect of which is to entitle the territories to be admitted as a state into the Union, whenever the inhabitants may give proof of their capacity for self-government,

and the number of them shall be as large as that of the residents of the territories heretofore received as states into the Union; or the number may be sufficient to bear the burdens and perform the duties of a state. The obligation created on the United States, by the 9th article of the treaty, in favor of the Mexican inhabitants who may elect to become citizens of the United States, could not be discharged without the acknowledgment of the right of the inhabitants of the territories to establish a state, at the proper time, to be determined in view of the considerations which have been mentioned. The obligation to admit the territories, is as perfect as one would be to receive as a state a territory with one hundred thousand inhabitants, including persons of every description, upon the ground that a compact between the Union and such territory bound the former to admit the latter as a state whenever her population amounted to this number. Congress would have no authority, if it should change its opinion as to the policy which dictated the compact, to limit the annual number of settlers in the territory, or make a requisition of those allowed to establish themselves there from particular descriptions of persons. The effect of any such act of Congress would be to retard the increase of population, and postpone to a more distant period, in violation of the compact, the right of the inhabitants to establish a state, and have it admitted into the Union. If the act made the right of any persons to settle there to depend upon their civil and political condition, the act would affect the right of the inhabitants, when they might found a state to elect whether slavery should be authorized or prohibited.

The sovereign power of each state belongs to the citizens of the state. A portion of this power they have granted by the constitution of the United States to the General Government: the remainder of it was retained by the citizens of each state. The sovereign power, in every state, to establish or prohibit, continue or abolish, the institution of slavery, belongs to the citizens of the state. This power, the citizens of a state may exercise in a convention, in which they adopt or alter their constitution, or in the legislature of the state, if they be authorized by their constitution to exercise such power in the legislative department of the state government.

Of the states admitted into the Union since its formation, some have established and others rejected, the institution. Some of the old thirteen have abolished the relation of master and slave, and nearly an equal number of them has preserved and yet maintains it.

The citizens of the several states who may migrate and establish themselves in the territories, and the Mexican inhabitants who may become citizens of the United States, according to the treaty, together with such other citizens as were there at the conquest and cession, and who yet remain, will be the first citizens of any state that may be founded there in future. Citizens of slave-holding states may settle themselves there who are opposed to slavery, and intend to employ, at the proper time, their portion of the sovereign power, which will be exercised to establish a state in the territories, to prohibit the relation of master and slave. From non-slave-holding states citizens may go there with the intention of using their share of power to authorize slavery, that had been excluded by the will of the majority from the states they

may leave. The will of all and of each of these descriptions of persons had been rendered ineffectual, by the adverse will of the majority of the citizens of the states from which such immigrants may go. But these, and all other citizens of the several states, who may settle in these territories, will carry with them equal and inherent shares of sovereign power, to be exercised whenever a state may be formed for the territory in which they may establish themselves. Whether the result of the exercise of this power at that time, will be the establishment or prohibition of slavery, no one can foresee. The result will depend on the will of the majority of the persons who shall have the right of citizenship in the new state when it may be founded. As the territories were acquired by the united power and resources of all the states, the citizens and other inhabitants of each state, have an equal right to seek homes there, and a new theater for the exercise of the sovereign power of these citizens, in the establishment of new states to be admitted into the Union, for the increase, we hope, of its prosperity, power and glory.

As the sovereign power belongs to the citizens of each state, it is divided into so many shares, and will so shortly be divided into many more, that the possessors of the numerous portions of it do not attract the attention which an absolute monarch does, and they themselves do not realize the possession of such power and habitually think and reason in relation to it as single sovereigns do. In this want of attention to the character of the citizens of the United States as sovereigns, is the source of all the difficulties which are encountered in the examination of the question we are considering.

If each of the states of the Union were an elective, but an absolute monarchy, with all the sovereign power of every state exercised by her monarch, and acknowledged by his subjects to belong to him; if the relation of master and slave were established by law, and slaves were numerous in some of the states and from the others excluded and the relation forbidden; if a union of the monarchies existed, and their foreign affairs were conducted and controlled by a council appointed by the authority of each; if this agency or government, in the exercise of power derived from the joint grant of all the sovereigns, should acquire by treaty any territory—what would be a just and lawful disposition of it? The agency or government of the league could not make it a state. A state, when founded on the territory, must be an elective monarchy, like the other states; as we suppose a guarantee on the part of the league that each state admitted into it shall be of this form and character. The citizens of these states who might settle in the territory, together with the old inhabitants, entitled under the treaty to the right, would become the citizens of the new state, when one might be established in the territory, and the monarch who might be elected by a majority of them, would have the exclusive right to determine whether the institution of slavery should be authorized or prohibited, continued or abolished. The government would hold the country, while it continued to be a territory of the league, in trust, to encourage the settlement of it by the subjects of all the sovereigns of the league, and to protect the persons and property of all the immigrants. How long would the league endure, if, in the council which governed it, the influence of the slave-holding monarchies was the

greatest, and prohibited the employment, in the territory, of labor and capital, in the establishment and working of manufactories, as an inducement to slave-holders to settle there, that they might elect a monarch who would establish slavery, and thus increase the power in the league of the slave-holding monarchies?

The general government of the United States acquired and holds these territories in trust for the sovereign citizens of the several states. The object of the Wilmot Provisoists is to induce Congress, the trustee, to prohibit the transfer of property in slaves, and the removal of their persons to the territories—to forbid the employment there of most of the moveable property of slave-holders; while the right of the inhabitants of the non-slave-holding states is treated as unquestionable to remove to, and use in, the territories all of their own moveable property.

The consequences of the accomplishment of this object would be the exclusion from the territories of most of the persons who are slave-holders and would otherwise establish themselves there, and the settlement of nearly the whole country by immigrants from the non-slave-holding states. The combined operation of these causes would secure the conversion of the territories into non-slave-holding states, and the soil and most of all the advantages of the new acquisitions, mainly for the inhabitants of the existing states of this description. What would be thought, by all the disinterested and impartial of our race, of an individual trustee of a large real estate, abounding in rich gold "washings," who, years before the time when it would be his duty, in the execution of the trust to divide and sell the estate in many different parcels, permitted some of the beneficiaries to work the gold "washings" with all the means and laborers they could transfer and employ in them, and thus increase their ability to purchase and monopolize the estate at the sale to be made by the trustee, while he prohibited the others from using more than half their wealth in the employment of labor in the same kind of work?

If the treaty had provided that the former Mexican laws should continue in force, it would require the exercise of the proper legislative power to terminate the authority of all, except such as are political, by repealing them. But an express agreement in the treaty, for the continuance of the obligation of the political laws of Mexico in the territories, would be void, as the treaty-making power is incompetent to give authority to laws which would be inconsistent with the constitution. If a Mexican law prohibited slavery in the territories while they belonged to Mexico, a stipulation in the treaty for its continuance, could not preserve its authority in the ceded country after it became a territory of the United States. The effect of the cession would be to annul the law, upon the ground of its repugnance to the constitution of the United States. But the acquisition of these territories, does not present the case of a country conquered and relinquished, or ceded, to the United States, with laws the obligation of which the treaty secured.

The feeble Mexican government, which existed once over a small part of the territories, had been subverted, and, upon its ruins, a military government established, by the authority of the President of the United States, in his character of Commander-in-chief of the American army,

before the treaty was made. The military government existed at the time of the ratification of the treaty, by the governments of the United States and Mexico. The legal effect of the cession, was to terminate the military government, and the conquered and ceded territories were left without a government or civil laws. If there were a government *de facto* in the territories, it would derive its authority from the implied assent of the inhabitants to the power it exercised, and a majority of them consists now of American citizens. Some of these were there at the conquest, and at the date of the cession, and the others have migrated there since. The Mexican government and laws had been overthrown, before nine-tenths of them established themselves in the country; and they have done no act since, from which their assent can be implied to the re-establishment of any of the laws of the old local, civil government. There is, indeed, no lawful civil authority in the territories, and there can be none, till after the establishment, by the inhabitants of the ceded country, or by Congress, of a government, or the establishment of a state in the territories and the admission of it into the Union. The condition of things which exists there, is the same that it would be if the territories had been without Mexican inhabitants and occupied solely by savages, not subject to Mexican laws, but having a right to occupy the soil, while the fee in it, and the dominion over the country, belonged to the Republic of Mexico, and the United States had taken forcible possession of the territories first, and obtained a cession of them afterward. In the case we have supposed, there would be no Mexican laws in force, in the territories, at the date of the cession, as the jurisdiction of the Mexican Republic had not been extended and established over the waste territories. There is no difference between the principle that would apply to a case in which a Mexican government and laws had not existed before the cession, and the case that has occurred, in which all these had been subverted before the treaty was made that contains no provision for the re-establishment of any of them. Mexican grants of wild lands, would entitle the grantees, in either case, to the estates conveyed, which the United States would be bound, by the treaty, and the laws of nations, to recognize and protect.

Any inhabitant of the territories, whether an American or Mexican, who was there when the treaty was made, or has gone and established himself there since, occupies a territory of the United States, but over which no civil government or civil laws exist. A Mexican inhabitant, who owned property there before the cession, has a good title to it still, unless it has been impaired, or transferred, by some act of his own. Any American, or other person, who is there with a right to property, which was property in the state of the Union from which he migrated, is entitled to hold and enjoy it as property, in the territories. As there was no law of the territories which prohibited the removal of his property of any kind, and none of the United States, he had as clear a right to take and use it, as he had to go himself and reside in the territories.

Every owner of property is entitled to an equal measure of protection for it, from the military power of the United States, which may be employed there, and, if Congress should establish a territorial government, it would be the duty of the government to protect equally, with

impartiality and fidelity, property of every kind within its territorial limits and belonging to the inhabitants of the country.

As the Mexican inhabitants were left, by the cession and conquest of foreigners, as will be shown hereafter, in territories without local laws, and many Americans resided there when these events occurred, some of whom held slaves, and other slaves have been moved there since, and are held in bondage, the masters can establish as perfect a right to the property they claim in their slaves, by producing and proving the existence of the laws of the state, in which they acquired the property, as any Mexican inhabitant can to the property he possesses, by tracing his title to the laws of Mexico as the source of it. No American resident has a right to require the claim to moveable property, of a Mexican inhabitant, to be decided according to the laws of the state on which the American relies to maintain his own title to personal property. The same principle rejects the pretension of Mexican inhabitants to have the question of the title to such property, set up by an American resident, determined according to the extinct laws of the subverted local government, or of the Republic of Mexico. If a territorial government should be established by the inhabitants, or by Congress, there is no power in either to authorize the government to make a distinction between property of different kinds, within the territorial limits of the government, and to afford protection to one kind and withhold it from another, or to prescribe any.

The eighth article of the treaty, by which the territories were ceded, secures the right to the Mexican inhabitants to continue their residence there, and allows them the alternative of retaining there their character and rights of Mexican citizens, or of becoming citizens of the United States, according to their election, to be made within a year from the exchange of the ratifications of the treaty. The effect of a failure on their part to make an actual election within the year to retain their character of foreigners and of Mexican citizens, and the continuance of their residence in the territories after the expiration of that period, the same article declares shall be a constructive election, the effect of which would make them at the end of the year citizens of the United States. It is not probable there have been many, if any, actual elections under the authority of the treaty, and there could be none by construction before the 30th of May, 1849, the end of one year after the exchange of the ratifications. Every Mexican inhabitant could, if he elected to do so, acquire the right, under the treaty, to remain during his life, in the territories, as a foreigner and a Mexican citizen. The territories were ceded to the United States, with no people, unconditionally, and, as the effect of the treaty alone, incorporated with the people of the United States. The savages, who occupied the territories, were their own rulers, and not subjects of Mexico, and neither party to the treaty intended they should ever become citizens of the United States. Territory, merely, was transferred, without any Mexican inhabitants made absolutely, by the treaty, a part of the people of the United States, and, therefore, entitled, after the cession, to the benefit of all the laws that were not political in their character, by which they had been governed in the territory before the treaty. No laws of a sovereign, who cedes territories, can be impressed upon territory alone and made inseparable from

it. If a territory be transferred without people incorporated by the treaty with the people who receive the cession, the authority of the laws of the former sovereign, in the territories, ceases with his dominion.

The Mexican inhabitants have the right reserved to them by the treaty, which, for any thing we can foresee, they may exercise, to leave the territories, and reside in some part of the Republic of Mexico, or to continue their residence in California and New Mexico, as foreigners and Mexican citizens. Should they become citizens of the United States, it will be the effect of a process of naturalization, after a residence, from necessity, for some time in the territories, after they became territories of the United States. They were foreigners before the cession, and their right to remain in the territories as foreigners was recognized by the treaty, which prescribed a mode in which they might afterward be naturalized and become citizens of the United States, as acts of Congress do for the benefit of all other foreigners, who establish themselves in the United States and apply for the rights of citizenship. The Mexican inhabitants have the privilege, in common with all other foreigners, of seeking and obtaining naturalization; but neither they or any other foreigners have, or can acquire, the right to subject to the laws of the native country of any of them the citizens of the Union in states, or in any territory of the United States.

The eleventh article of the treaty contains a statement of a fact made, and therefore affirmed to be true, by the governments of the United States and of Mexico, that a great part of the territories that were ceded, was occupied by savage tribes of Indians. They were not subject to Mexico, or to any local authority established by that Republic. From other sources of information we have learned, that all but small parts, comparatively, of the territories were occupied exclusively by the tribes referred to in the treaty. They had preserved their independence. They had chiefs and councils and usages, or laws, of their own. They acknowledged no allegiance to Mexico, and rendered no obedience to her laws; but were almost constantly engaged in wars against her. The Mexican inhabitants were indebted, for their occupancy of the soil, in many of their settlements, to the sufferance of some of these tribes, which had the power to terminate the privilege whenever they chose—and they frequently extinguished it suddenly, and took compensation for the temporary possession of the soil, in the plunder of the property, and the massacre of the people.

These tribes had, by their power and cruelty, excited such terror in Mexico, that the United States were required, by that Republic, to create, by the treaty an obligation upon the General Government to prevent the tribes, forcibly, if necessary, from making any incursions into any territory, which continued, after the treaty, to be a part of Mexico, and to punish and exact satisfaction for them from the Indians, if they should elude the vigilance and power of the United States, and make any such incursions.

These Indians, in the undisturbed possession of nearly all the territories, held slaves, as the parties to the treaty admit, in the 11th article of it, and would sell and transfer them to others; and, according to one of the most recent authorities, Indian men and women are held in legal servitude by the Californians, who are the descendants of the Spanish

conquerors, and form the best part of the whole population of California.

The usage, or law, of the Indians on the subject, which prevailed over nearly all the territories, authorized slavery. At the time, and before the local government of the territories was overthrown by the employment of the military power of the United States, this Indian usage, or law, as well as the authority in relation to property of the same kind under which the Californians acted, prevailed. Property in slaves, held by the Indian inhabitants of the territories, and, probably, by white persons and Mexicans residing among the tribes at the time of the cession, is recognized by the United States in the eleventh article of the treaty.

One object of the article was to prohibit, in future, any purchase, by any inhabitant of the United States, of any Mexican or foreigner residing in Mexico, who had been captured by Indians inhabiting the territory of either of the two republics. This prohibition relates to all the persons who had been previously captured, and, consequently, to the persons who had been captured before the session by the Indians of California and New Mexico. Another, and the next part of the same article, binds the United States to exercise the influence and power of the General Government, faithfully, to rescue and return to their country, or deliver them to the representatives of the Mexican Government, all persons captured within Mexican territory and carried into the territory of the United States after the cession, as we understand the meaning and effect of the treaty to be. No part of the treaty requires the government of the United States to extinguish the claim of the Indians to property in their captives, or to prevent them from selling their captives to any other person than an inhabitant of the United States. The prohibition in the treaty extends no further than to make it unlawful for any inhabitant of the United States to purchase or acquire any such captives. In the limitation of the prohibition is a recognition, by the governments of the two Republics, of the property of Indians, or of those who claimed, under them, in such captives, and of the right of those who were the owners at the time of the cession, to sell their slaves to any other person than an inhabitant of the United States.

ART. IX.—HOW SHALL COTTON MAINTAIN REMUNERATING PRICES?

Various propositions have been advanced in reply to the above query. Some have proposed a "Cotton Planter's Convention," to reduce the amount of production. Some have attacked the doctrine of *protective duties* as destructive to the planters, like Mr. McDuffie, in his "forty bale theory," and advocated "free trade," as the natural parent of "high prices." The truth is, the question is difficult of solution; and no wonder such various opinions are ventured, even among the most intelligent. We are willing to let the planters speak for themselves, and give publication, with pleasure, to the following communication from one of them. If the plan advocated be objectionable, or impracticable, it may suggest to some one a better one, and, at all events, it seems to us far less impracticable and objectionable, than the *Cotton Planters' Convention*, which takes for granted, that the supply of the staple is above the world's wants. The world has yet millions to be clothed, if we will but trade with them upon fair terms. Give us new markets, and extended commerce, and the demand for cotton will be equal to, if it does not exceed, the supply, which experience begins now to show is *limited*.—ED.

PANOLA COUNTY, *Mississippi*.

TO J. D. B. DE BOW, Esq.—Seeing numerous calls made upon the cotton planter, by the Carolina and Georgia papers, to meet in *convention*, to take into consideration the adoption of some plan to protect ourselves from ruin, which must ensue, if no relief be found—for, really, our principal commodity (cotton) is not selling for enough to pay the current plantation expenses—I am induced to write to you, making some suggestions to said Convention, or to you, whom we look to as the great advocate of our rights. I have been a constant reader and admirer of your Review, which has given me an insight into the plan that I propose for the *protection* of cotton planters, which is this, that we (the cotton planters) call on our commission merchants to form a *Chamber of Commerce*, to be called “The Planters’ Chamber of Commerce.” There are, in New Orleans, Mobile, Augusta, Charleston, Savannah, &c., commission merchants, who can communicate by Telegraph, every hour, who shall be considered our representatives, elected by our patronage, as are our members of Congress, by our votes, and *they shall act in concert*, which the cotton planters can never do, from the fact, that we are too numerous, and scattered over too large an extent of territory, without the means of communicating with each other by Telegraph. It shall be the duty of this “Chamber” to say, that cotton shall not be sold for less than a stated price, and any merchant, departing from that law, would not again receive any patronage. Said Chamber might fix the price of cotton at Memphis, Natchez, and all other inland towns. The object would be, to make the commission merchant the true friend and representative of the planter, and, my word for it, no cotton planter will patronize any merchant who will not adhere strictly to laws enacted by such a Chamber. It might be urged, that the factor had accepted for the planter. To illustrate, grant that I draw a bill on my factor to the amount of my cotton—the bill is sent forward and my cotton is not sold—the bill goes to protest, in order to sustain its legal claim: are there not capitalists that would always be glad to take paper, based upon cotton, when it is known that the parcel is in hand? If not so, the Chamber could pass a law, that such protest should not discredit either merchant or planter, until the cotton was sold. This, I think, would work well. Now, sir, these views are predicated upon a statement in your last March number, that there is not more cotton made than would be needed for consumption; yet, with this fact before us, we see that the price has gone so low, until what we receive does not pay expenses. The cause has been attributed to the revolution in France; but time has proved this untrue. Up to the 18th of last month, France had taken from your market within twelve thousand of as many bales of cotton as she did the year before, and Great Britain more than twice that amount her usual quantity. What does this prove, but concert of action on the part of manufacturers and a want of concert amongst planters, which can only be effected through our factors? Look at the enormous profits realized by the cotton manufacturer. A few days since, I conversed with a manufacturer from Cincinnati, Ohio, who boasted that he had purchased cotton at 5 cts. per lb. and worked it into sheeting, which he was selling at 6½ cts. per yard, as fast as he could make it, and *one* pound of cotton made *three*

yards of cloth. I would not have the price of cotton advance so as to check consumption, but merely to remunerate labor. Let us examine the effort made last summer, by the bagging manufacturers, to lower the price of hemp. When they stopped work for 60 days the growers of the raw material held on, and, as it were, by concert raised the price from 5 to 5½ cents per lb.; when it was represented, by all calculations, that there was nearly, or quite, enough then manufactured to put up the present crop. Here we have an example of manufacturers contending, by concert, against the planters, and, according to the statistics of your Review, there are many more laborers engaged in working up the raw material, than in producing it; and it would be as ruinous for them to stop their machinery, as for us to quit our fields. Their employers are making enormous profits, and why? Merely by concert of action among the manufacturers of Manchester, and the brokers of Liverpool, who govern the price of cotton over the whole world. Our home manufacturers obey *their* bidding. Now, I think, nothing is needed to give the cotton planter a fair remuneration for his labor, but concert of action, which can only be effected through our factors. Should you deem the views contained in this letter worthy consideration, I would feel gratified for you to publish them, that it might draw public attention to the plan proposed; at the same time, you would lend us the aid of your high position, in carrying out this, or some other plan, for concert of action, to relieve those, whose interest you so ably advocate, from ruin.

With a sincere desire for your success in aiding the planting and great commercial interest of the South, I remain, with the highest consideration, your obedient servant.

MILES H. MCGEEHEE.

COMMERCE OF THE UNITED STATES, 1848.

Since the establishment of the Review, we have preserved regularly, as our volume will evince, the commercial results of the whole Union, as well as of individual states and cities. From the last Report of the Secretary of the Treasury, we compile

1. DOMESTIC EXPORTS OF THE UNITED STATES, 1848.

Summary statement of the value of the exports of the growth, produce, and manufacture of the United States, during the year, commencing July 1, 1847, and ending June 30, 1848.

THE SEA.		Product of Wood—	
Fisheries—		Staves, shingles, boards,	
Dried fish, or cod fisheries..	\$603,482	hewn timber.....	2,429,863
Pickled fish, or river fisheries (herring, shad, salmon, mackerel).....	109,315	Other lumber.....	283,133
Whale and other fish oil....	552,388	Masts and spars.....	129,760
Spermaceti oil.....	208,832	Oak bark and other dye....	184,126
Whalebone.....	314,107	All manufactures of wood	2,042,695
Spermaceti candles.....	186,879	Naval stores, tar, pitch,	
		resin and turpentine....	752,303
		Ashes, pot and pearl....	466,477
	\$1,980,963	AGRICULTURE. \$7,059,084	
THE FOREST.		Product of animals—	
Skins and furs.....	607,780	Beef, tallow, hides, horn, cat.	1,905,341
Ginseng.....	162,647	Butter and cheese.....	1,361,668

Pork (pickled), bacon, lard, live hogs.....	9,003,272	Cotton piece goods—	
Horses and mules.....	190,295	Printed and colored.....	351,169
Sheep.....	20,823	White.....	4,866,559
Wool.....	57,497	Nankeen.....	2,365
		Twist, yarn, and thread...	170,633
		All other manufactures of	327,479
Vegetable food—	\$12,538,896	Flax and hemp—	
Wheat.....	2,669,175	Cloth and thread.....	495
Flour.....	13,194,103	Bags and all manufactures	
Indian corn.....	3,837,483	of.....	6,218
" meal.....	1,807,601	Wearing apparel.....	574,834
Rye meal.....	174,566	Combs and buttons.....	16,461
Rye, oats, and other small		Brushes.....	2,160
grain and pulse.....	376,572	Billiard tables and appara-	
Biscuit or ship bread....	619,096	tus.....	12
Potatoes.....	876,572	Umbrellas and parasols....	2,916
Apples.....	88,944	Leather and morocco skins..	
Rice.....	2,331,824	not sold per pound.....	16,483
		Fire engines and apparatus..	7,686
	\$25,185,647	Printing presses and type...	30,403
Tobacco.....	7,551,122	Musical instruments.....	38,508
Cotton.....	61,998,294	Books and maps.....	75,193
Hemp.....	27,657	Paper and stationery.....	78,307
All other agricultural products—		Paints and varnish.....	50,739
Flaxseed.....	1,584	Vinegar.....	13,920
Hops.....	17,671	Earthen and stoneware.....	8,512
Brown sugar.....	8,891	Manufactures of glass.....	76,007
Indigo.....	1,100	" tin.....	12,353
		" pewter and	
MANUFACTURES.	\$29,246	lead.....	7,739
Soap and tallow candles...	670,223	" marble and	
Leather, boots, and shoes...	194,095	stone.....	22,466
Household furniture.....	297,358	" gold and sil-	
Coaches and other carriages	89,963	ver and gold	
Hats.....	55,493	leaf.....	6,241
Saddlery.....	27,435	Gold and silver coin.....	2,700,412
Wax.....	134,577	Artificial flowers and jewel-	
Spirits from grain.....	90,957	ry.....	11,217
Beer, ale, porter, and cider.	78,071	Molasses.....	5,563
Snuff and tobacco.....	568,435	Trunks.....	6,126
Linseed oil and spirits of tur-		Brick and lime.....	24,174
pentine.....	331,404	Salt.....	73,274
Cordage.....	29,911		
Iron—pig, bar, and nails....	154,036		\$9,586,624
" castings.....	83,188	Coal.....	47,112
" all manufactures of... 1,022,408		Lead.....	84,278
Spirits from molasses.....	269,467	Ice.....	75,547
Sugar refined.....	253,900	Articles not enumerated—	
Chocolate.....	2,207	Manufactured.....	1,137,828
Gunpowder.....	125,263	Other articles.....	851,383
Copper and brass.....	61,468		
Medicinal drugs.....	210,581		\$1,989,211
	\$4,750,440	Grand total.....	\$132,904,121

Total value of Domestic Merchandise exported to each foreign country, distinguishing the amounts shipped in American and foreign vessels, in 1847-8.

Whither exported.	In American vessels.	In foreign vessels.	To each country.	To dominions of each power.
Russia.....	\$998,962	\$48,630	1,047,582	\$1,047,582
Prussia.....	.....	145,074	145,074	145,074
weden and Norway.....	150,903	475,069	625,972	701,468

Swedish West Indies.....	71,052	4,444	75,496	
Denmark.....	3,889	160,772	164,551	1,041,630
Danish West Indies.....	783,196	93,773	876,969	
Hanse Towns.....	604,045	3,252,631	3,856,676	3,856,676
Holland.....	740,363	855,087	1,595,450	
Dutch East Indies.....	116,767	17,138	133,905	
Dutch West Indies.....	293,326	23,340	316,666	2,161,522
Dutch Guiana.....	115,501	.....	115,501	
Belgium.....	1,589,899	399,865	1,989,764	1,989,764
England.....	42,784,681	20,143,343	62,928,024	
Scotland.....	1,309,457	1,145,969	2,455,426	
Ireland.....	811,192	1,568,099	2,379,291	
Gibraltar.....	282,365	28,035	310,400	
Malta.....	33,128	.....	33,128	
British East Indies.....	510,284	.....	510,284	80,306,148
Cape of Good Hope.....	100,338	.....	100,338	
Honduras.....	234,857	14,791	249,648	
British Guiana.....	534,204	60,910	595,114	
British West Indies.....	3,573,012	771,524	4,344,536	
British American Colonies..	2,695,296	3,704,663	6,399,959	
France on the Atlantic....	12,754,788	1,405,010	14,159,798	
France on the Mediterranean	1,151,227	63,860	1,215,087	
French West Indies.....	426,471	42,882	469,353	15,946,680
French Guiana.....	48,737	.....	48,737	
Miquelon & oth. Fr'h. fish's.	33,079	19,787	52,866	
French African ports.....	.....	839	839	
Spain on the Atlantic.....	417,734	180,063	597,797	
Spain on the Mediterranean	354,376	1,387,098	1,741,474	
Teneriffe and other Canaries	7,802	2,119	9,921	9,620,243
Manilla & Philippine Isl'ds.	36,949	.....	36,949	
Cuba.....	6,341,147	91,233	6,432,380	
Other Spanish West Indies.	777,551	24,171	801,722	
Portugal.....	54,603	57,657	112,260	
Madeira.....	84,071	26,771	110,842	328,485
Fayal and other Azores....	3,660	.....	3,660	
Cape de Verds.....	101,723	.....	101,723	
Italian ports not specified..	959,136	141,977	1,101,113	1,101,113
Sicily.....	12,131	5,623	17,754	17,754
Sardinia.....	150,708	24,875	175,583	175,583
Tuscany.....	5,197	.....	5,197	5,197
Triste, and other Austrian				
ports on the Adriatic.....	1,370,013	331,482	1,701,495	1,701,495
Turkey, Levant, &c.....	114,830	.....	114,830	114,830
Hayti.....	871,899	65,687	937,586	937,586
Mexico.....	1,997,913	97,572	2,095,485	2,095,485
Central Republic of America	29,995	4,945	34,940	34,940
New Grenada.....	4,234	74,931	79,165	79,165
Venezuela.....	373,327	26,903	400,230	400,230
Brazil.....	2,924,728	168,008	3,092,736	3,092,736
Cisplatine Republic.....	272,994	66,865	339,859	339,859
Argentine Republic.....	176,614	32,089	208,703	208,703
Chili.....	1,703,625	.....	1,703,625	1,703,625
China.....	2,063,625	.....	2,063,625	2,063,625
Peru.....	113,502	11,116	124,618	124,618
West Indies generally.....	129,741	3,220	132,961	132,961
South America generally...	86,385	.....	86,385	86,385
Asia generally.....	266,452	.....	266,452	266,452
Africa generally.....	681,415	89,974	771,389	771,389
South Seas and Pacific.....	305,118	.....	305,118	305,118
Total.....	\$95,544,217	\$37,359,994	\$132,904,121	\$132,904,121

FOREIGN MERCHANDISE EXPORTED FROM THE UNITED STATES.

Value of foreign merchandise exported from the United States to each foreign country during the year ending June 30, 1848.

Whither exported.	Free of duty.	Paying duties ad valorem.	Total value.	of each power.
Russia.....	\$6,283	\$102,145	108,428	\$108,428
Prussia.....	.....	15,385	15,385	15,385
Sweden and Norway.....	852	31,992	32,844	33,644
Swedish West Indies.....	40	760	800	800
Denmark.....	7,478	9,774	17,252	17,252
Danish West Indies.....	38,417	38,346	76,763	76,763
Hanse Towns.....	158,107	307,002	465,109	465,109
Holland.....	32,991	238,522	271,513	271,513
Dutch East Indies.....	92,334	15,620	107,954	107,954
Dutch West Indies.....	9,504	12,643	22,147	22,147
Dutch Guiana.....	.....	1,517	1,517	1,517
Belgium.....	101,441	98,736	200,171	200,171
England.....	8,239,857	684,434	8,924,291	8,924,291
Scotland.....	.....	38,419	38,419	38,419
Ireland.....	.....	1,303	1,303	1,303
Gibraltar.....	29,239	32,306	61,545	61,545
Malta.....	2,506	13,449	15,955	15,955
British East Indies.....	56,298	100,417	156,715	156,715
Cape of Good Hope.....	15,589	4,350	19,939	19,939
British Honduras.....	4,624	39,557	44,181	44,181
British Guiana.....	249	1,126	1,365	1,365
British West Indies.....	12,918	27,429	40,347	40,347
British American colonies..	961,900	1,020,796	1,982,696	1,982,696
France on the Atlantic....	3,804,426	473,733	4,278,159	4,278,159
France on the Mediterranean	107,857	58,409	166,266	166,266
French West Indies.....	7,123	12,948	20,071	20,071
French Guiana.....	.....	1,684	1,684	1,684
Spain on the Mediterranean	6,875	.....	6,875	6,875
Teneriffe and other Canaries	970	259	1,229	1,229
Manilla and Philippine Isl'ds	12,696	847	13,543	13,543
Cuba.....	128,836	335,497	464,333	464,333
Other Spanish West Indies.	.....	37,012	37,012	37,012
Portugal.....	.....	3,984	2,984	2,984
Madeira.....	894	6,513	7,407	7,407
Cape de Verdes.....	2,542	4,307	6,849	6,849
Italy.....	112,951	46,537	159,488	159,488
Sicily.....	.....	9,075	9,075	9,075
Sardinia.....	7,364	11,025	18,389	18,389
Trieste, &c.....	39,096	68,631	107,727	107,727
Turkey, Levant, &c.....	79,355	30,966	110,321	110,321
Hayti.....	16,624	139,605	156,229	156,229
Mexico.....	34,068	1,924,899	1,958,967	1,958,967
Central America.....	.....	15,438	15,438	15,438
New Grenada.....	19,907	25,531	45,438	45,438
Venezuela.....	44,286	18,302	62,588	62,588
Brazil.....	195,325	84,373	279,698	279,698
Cisplatine Republic.....	21,225	22,644	43,869	43,869
Argentine Republic.....	14,165	11,060	25,225	25,225
Chili.....	9,588	211,298	220,886	220,886
Peru.....	.....	16,731	16,731	16,731
China.....	72,359	54,029	126,388	126,388
West Indies generally.....	.....	1,337	1,337	1,337
Asia generally.....	20,460	7,819	28,279	28,279
Africa generally.....	18,494	42,909	61,403	61,403
South Seas and Pacific Ocean	3,408	64,075	67,483	67,483
Total.....	\$14,551,511	\$6,576,499	\$21,128,010	\$21,128,010
Entitled to drawback.....	.....	2,947,151	2,947,151	2,947,151
Not entitled to drawback...	14,551,511	759,407	15,310,918	15,310,918
From warehouse.....	.....	2,869,491	2,869,941	2,869,941

The total value of foreign merchandise exported, as above, from the United States, during the year, amounted to \$21,128,010, of which \$14,113,714 was shipped in American vessels, and \$7,014,296 in foreign vessels.

IMPORTS INTO THE UNITED STATES FROM ALL NATIONS.

Statement of goods, wares, and merchandise imported into the United States from foreign countries during the year ending June 30, 1848.

Whence imported.	Free of duty.	Paying duties ad valorem.	Total.	From dominions of each power.
Russia	\$19,394	\$1,299,690	\$1,319,084	\$1,319,084
Prussia .....	.....	22,817	22,817	22,817
Sweden and Norway	1,513	749,304	750,817	750,817
Swedish West Indies	9,627	4,158	13,785	764,602
Denmark	60	19,557	19,617	19,617
Danish West Indies	144,344	391,494	535,738	535,738
Hanse Towns	31,524	6,261,756	6,293,280	6,293,280
Holland	213,222	1,204,686	1,417,908	1,417,908
Dutch West Indies	106,825	346,790	453,615	453,615
Dutch East Indies	156,818	92,528	249,346	249,346
Dutch Guiana .....	.....	51,297	51,297	51,297
Belgium	11,799	1,313,262	1,325,061	1,325,061
England	3,147,298	56,616,204	59,763,502	59,763,502
Scotland	20,900	1,645,794	1,666,694	1,666,694
Ireland	126,032	289,891	415,923	415,923
Gibraltar .....	.....	4,445	4,445	4,445
Malta	15	369	384	384
British East Indies	1,389	2,068,243	2,069,632	2,069,632
Cape of Good Hope	529	59,902	60,431	60,431
British Honduras	105,802	79,882	185,684	185,684
British Guiana	12,577	11,677	24,254	24,254
British West Indies	464,540	694,023	1,158,563	1,158,563
British American Colonies ..	1,228,223	2,418,244	3,646,467	3,646,467
Ionian Islands .....	.....	15,106	15,106	15,106
France on the Atlantic	340,613	26,719,101	27,059,714	27,059,714
France on the Mediterranean ..	11,091	1,025,226	1,036,317	1,036,317
French Guiana	29,741	34,247	63,988	63,988
Miquelon and Fr. Fisheries ..	.....	733	733	733
French West Indies	107,376	19,663	127,039	127,039
Spain on the Atlantic	55,429	221,676	277,105	277,105
Spain on the Mediterranean ..	34,345	885,001	919,346	919,346
Teneriffe and other Canaries ..	.....	35,061	35,061	35,061
Manilla and Philippine Isl'ds ..	10,382	1,186,645	1,197,027	1,197,027
Cuba	1,004,446	11,849,026	12,853,472	12,853,472
Other Spanish West Indies ..	56,949	2,049,347	2,106,296	2,106,296
Portugal	3,944	210,838	214,782	214,782
Madeira .....	.....	9,432	9,432	9,432
Fayal and other Azores	784	10,654	11,438	11,438
Cape de Verds .....	.....	225	225	225
Italy	58,712	1,557,388	1,616,100	1,616,100
Sicily	5,001	613,028	618,029	618,029
Trieste and Adriatic ports ..	2,537	383,276	385,813	385,813
Turkey and Levant ports ...	590	405,438	406,028	406,028
Hayti	1,074,594	292,580	1,367,174	1,367,174
Mexico	865,223	716,014	1,581,247	1,581,247
Central America .....	.....	18,272	18,272	18,272
New Grenada	99,142	114,154	213,296	213,296
Venezuela	636,709	588,902	1,225,611	1,225,611
Brazil	5,998,162	1,994,486	7,992,648	7,992,648
Cisplatine Republic	26,192	496,872	523,064	523,064
Argentine Republic	2,836	1,023,261	1,026,097	1,026,097
Chili	65,834	1,244,617	1,310,451	1,310,451
Peru	76,660	241,099	317,759	317,759
China	6,225,914	1,857,562	8,083,496	8,083,496

West Indies generally	3,358	7,236	10,594	10,594
Asia generally	15,515	239,885	255,400	255,400
Africa generally	100,383	555,202	655,585	655,585
South Seas and Pacific Ocean	1,800	8,160	9,960	9,960
Sandwich Islands .....	.....	6,508	6,508	6,508
Other places .....	.....	371	371	371

Total..... \$22,716,603 \$132,282,325 \$154,998,928 \$154,998,928

The total value of imports from all countries during the year, as above, amounted to \$154,998,928; of which \$128,647,232 was received in American vessels, and \$26,351,696 in foreign vessels.

EXPORTS TO, AND IMPORTS OF, UNITED STATES FROM ALL NATIONS.

Statistical view of the exports to, and imports from, each foreign country during the year ending June 30, 1848.

Countries.	Value of Exports.		Total.	Value of imports.
	Domestic produce.	For'n produce.		
Russia.....	\$1,047,582	\$108,428	\$1,156,010	\$1,319,084
Prussia.....	145,074	15,285	160,459	22,817
Sweden and Norway.....	625,972	32,844	658,816	750,817
Swedish West Indies.....	75,496	800	76,296	13,785
Denmark.....	164,661	17,252	181,913	19,617
Danish West Indies.....	876,969	76,874	953,843	535,738
Holland.....	1,595,450	271,513	1,866,963	1,417,908
Dutch East Indies.....	133,905	107,954	241,859	249,346
Dutch West Indies.....	316,666	22,147	338,813	453,615
Dutch Guiana.....	115,501	1,517	117,018	51,297
Hanse Towns.....	3,856,676	465,109	4,321,785	6,293,280
Belgium.....	1,989,764	200,171	2,189,935	1,325,061
England.....	62,928,024	8,924,291	71,852,315	59,763,502
Scotland.....	2,455,426	38,418	2,493,845	1,666,694
Ireland.....	2,379,291	1,303	2,380,594	415,923
Gibraltar.....	310,400	61,545	371,945	4,445
Malta.....	33,128	15,955	49,083	384
British East Indies.....	510,284	156,715	666,999	2,069,632
British West Indies.....	4,344,536	40,347	4,384,883	1,158,563
British Guiana.....	595,114	1,365	596,479	24,254
British Honduras.....	249,648	44,181	293,829	185,684
Cape of Good Hope.....	100,338	19,939	120,277	60,431
Mauritius.....	.....	.....	.....	.....
British American Colonies..	6,399,959	1,982,696	8,382,655	3,646,467
France on the Atlantic....	14,159,798	4,278,159	18,437,957	27,059,714
France on the Mediterranean	1,215,087	166,266	1,381,353	1,036,317
French West Indies.....	469,353	20,071	489,424	127,039
French Guiana.....	48,737	1,684	50,421	63,988
French fisheries.....	52,866	.....	52,866	733
French African ports.....	839	.....	839	.....
Spain on the Atlantic.....	597,797	.....	597,797	277,105
Spain on the Mediterranean	1,741,474	6,875	1,748,349	919,346
Teneriffe, &c.....	9,921	1,229	11,150	35,061
Manilla.....	36,949	13,543	50,492	1,197,027
Cuba.....	6,432,380	464,333	6,896,713	12,853,472
Porto Rico.....	801,722	37,012	838,734	2,106,296
Portugal.....	112,260	2,984	115,244	214,782
Madeira.....	110,842	7,407	118,249	9,432
Fayal and the Azores.....	3,660	.....	3,660	11,438
Cape de Verd Islands.....	101,723	6,849	108,572	225
Sardinia.....	175,583	18,389	193,972	.....
Tuscany.....	5,197	.....	5,197	.....
States of the Church.....	.....	.....	.....	.....
Sicily.....	17,754	9,075	26,829	618,029
Italian States generally....	1,101,113	159,488	1,260,601	1,616,100
Ionian Republic.....	.....	.....	.....	15,106

Trieste, &c.	1,701,495	107,727	1,809,222	385,813
Turkey.	114,830	110,321	225,151	406,028
Mexico.	2,095,495	1,962,951	4,058,436	1,581,247
Central America.	34,940	15,438	50,378	18,272
New Grenada.	79,165	45,438	124,603	213,296
Venezuela.	400,230	62,798	463,028	1,225,611
Brazil.	3,092,736	279,698	3,372,434	7,992,948
Cisplatine Republic.	339,859	43,869	383,728	523,064
Argentine Republic.	208,703	25,225	233,928	1,026,097
Chili.	1,703,625	220,386	1,924,511	1,310,451
Peru.	124,618	16,731	141,349	317,759
Bolivia. ....	.....	.....	.....	.....
China.	2,063,625	126,388	2,190,013	8,083,496
Hayti.	937,586	156,229	1,093,815	1,367,174
Europe generally. ....	.....	.....	.....	.....
Asia generally.	266,452	28,279	294,731	255,400
Africa generally.	771,389	61,403	832,791	655,585
West Indies generally.	132,961	1,337	134,298	10,594
South America generally.	86,385	.....	86,385	.....
Liberia. ....	.....	.....	.....	.....
Pacific Ocean.	305,118	67,483	372,601	9,960
Indian Ocean. ....	.....	.....	.....	.....
Atlantic Ocean. ....	.....	.....	.....	.....
Sandwich Islands. ....	.....	.....	.....	6,508
North-west Coast. ....	.....	.....	.....	.....
Uncertain places. ....	.....	.....	.....	371
Total.	\$132,904,121	\$21,132,315	\$154,036,436	\$154,998,928

Statement of the Commerce of each State and Territory, from July 1, 1847, to the 30th day of June, 1848.

	Value of Exports.		Val. of Imp'ts.	
	Domestic Produce.	Foreign Produce.	Total.	Total.
Maine.	\$1,937,006	\$20,389	\$1,957,395	\$795,565
New Hampshire.	7,807	436	8,243	61,303
Vermont.	299,269	234,833	534,102	306,005
Massachusetts.	9,308,337	4,111,362	13,419,699	28,647,707
Rhode Island.	215,860	5,771	221,631	351,590
Connecticut.	501,064	.....	501,064	229,310
New York.	38,771,209	14,579,948	53,351,157	94,525,141
New Jersey.	62	.....	62	1,835
Pennsylvania.	5,428,309	304,024	5,732,333	12,147,584
Delaware.	83,039	19	83,058	490
Maryland.	7,016,034	113,748	7,129,782	5,343,643
District of Columbia.	83,666	.....	83,666	25,938
Virginia.	3,679,858	1,554	3,681,412	215,031
North Carolina.	340,028	.....	340,028	195,814
South Carolina.	8,081,917	.....	8,081,917	1,485,299
Georgia.	3,670,415	.....	3,670,415	217,114
Florida.	1,896,683	.....	1,896,683	64,267
Alabama.	11,920,693	7,056	11,927,749	419,396
Louisiana.	39,350,148	1,621,213	40,971,361	9,380,439
Mississippi. ....	.....	.....	.....	.....
Tennessee. ....	.....	.....	.....	10,001
Missouri. ....	.....	.....	.....	148,560
Ohio.	147,599	.....	147,599	186,726
Kentucky. ....	.....	.....	.....	25,971
Michigan.	111,194	441	111,635	115,760
Illinois.	41,835	.....	41,835	4,365
Texas.	12,089	131,521	143,610	94,024
Total.	\$132,904,121	\$21,132,315	\$154,036,436	\$154,998,928

Statement of the total imports, and the imports consumed in the United States, exclusive of specie, during each fiscal year, from 1821 to 1848; showing, also, the domestic and foreign exports, exclusive of specie, and the tonnage employed during the same periods.

Years.	Total im- ports.	Imports con- sumed in U.S. exclusive of specie.	Domestic pro- duce exp'd exclusive of specie.	For'n mdse. exported exclusive of specie.	Total exp'ts.	Tonnage.
1821*	\$62,585,724	\$43,696,405	\$43,671,894	\$10,824,429	\$64,974,382	1,998,958
1822	83,241,541	68,395,673	49,874,079	11,476,022	72,160,291	1,324,099
1823	77,579,267	51,310,736	47,155,408	21,170,635	74,699,030	1,336,566
1824	90,549,007	53,846,567	50,649,500	18,322,605	75,986,657	1,389,163
1825	96,340,075	66,395,722	66,944,745	23,793,588	99,535,388	1,423,112
1826	84,974,477	57,652,577	52,449,855	20,440,934	77,595,322	1,534,191
1827	79,484,068	54,901,108	57,878,117	16,431,830	82,324,827	1,620,608
1828	88,509,824	66,975,505	49,976,632	14,044,578	72,264,686	1,741,292
1829	74,492,527	54,741,571	55,087,307	12,347,344	72,358,671	1,260,798
1830	70,876,920	49,575,099	58,524,878	13,145,857	73,849,508	1,191,776
1831	103,191,124	82,808,110	59,218,583	13,077,069	81,310,583	1,267,847
1832	101,029,266	75,327,688	61,726,529	19,794,074	87,176,943	1,439,450
1833	108,119,311	83,470,067	69,950,856	17,577,876	90,140,433	1,606,151
1834	126,521,332	86,973,147	80,623,662	21,636,553	104,336,973	1,758,907
1835	149,895,742	122,007,974	100,459,481	14,756,321	121,693,577	1,824,940
1836	189,980,035	158,811,392	106,570,942	17,767,762	128,663,040	1,882,103
1837	140,939,217	113,310,571	94,280,895	17,162,232	117,419,376	1,896,656
1838	113,717,404	86,552,598	95,560,880	9,417,690	108,486,616	1,995,640
1839	162,092,132	145,870,816	101,625,533	10,626,140	121,028,416	2,096,479
1840	107,141,519	86,250,335	111,660,561	12,008,371	132,085,946	2,180,764
1841	127,946,177	114,776,309	103,636,236	8,181,235	121,851,803	2,130,744
1842	100,162,087	87,996,318	91,799,242	8,078,753	104,691,534	2,092,291
1842	21,584,599	12,431,376	25,845,451	1,713,112	28,115,493	2,174,862
1843	43,169,200	24,862,753	51,790,903	3,426,223	56,230,987	2,158,603
1844	108,435,035	96,390,548	99,531,774	6,214,058	111,200,046	2,280,095
1845	117,254,564	105,599,541	98,455,330	7,584,781	114,646,606	2,417,002
1845	121,691,797	110,048,859	101,718,042	7,865,206	113,488,516	2,562,085
1847	146,545,638	116,258,310	150,574,844	6,166,039	158,648,622	2,839,046
1848	154,977,876	127,490,012	130,203,709	7,986,806	154,032,131	3,150,502

* From 1821 to 1842 the amounts are to September 30. They are then given for the last three months of 1842; then for first six months of 1843 to 30th June. The years 1844, '45, '46, '47, '48, are to the 30th June, from 1st July, each.

Aggregate value of Breadstuffs and Provisions exported each year, from 1821 to 1848, inclusive.

Years.	Value.	Years.	Value.
1821	\$12,341,901	1835	\$12,009,399
1822	13,886,856	1836	10,614,130
1823	13,767,847	1837	9,588,359
1824	15,059,484	1838	9,636,650
1825	11,634,449	1839	14,147,779
1826	11,303,496	1840	19,067,535
1827	11,685,556	1841	17,196,102
1828	11,461,144	1842	16,962,876
1829	13,131,858	1843	11,204,123
1830	12,075,430	1844	17,970,135
1831	17,538,227	1845	16,743,421
1832	12,424,703	1846	27,701,121
1833	14,209,128	1847	68,701,921
1834	11,524,024	1848	37,472,751

\$471,000,405

TONNAGE OF THE UNITED STATES.

	Tons.
Aggregate tonnage, 30th June, 1848.....	3,154,041
Of which permanent registered.....	1,067,976
" temporary " 	292,910
Total registered.....	1,660,886
Permanent enrolled.....	1,691,327
Temporary " 	56,304
.....	1,747,631
Licensed under 20 tons coasting.....	38,328
" " " Cod Fishery.....	7,196
.....	45,524
Total tonnage.....	3,154,041
Of the enrolled and licensed in coasting.....	1,620,988
In Mackerel Fishery....	483,558
In Cod " 	82,651
In Whale " 	432
Total.....	1,747,629

The Whale Fishery employs in all about 192,000 tons, and steam navigation 411,823 tons in coasting trade.

ADULTERATED DRUGS.

The Inspector of Drugs, at New York, under the late act of Congress, reports that he rejected as base and spurious, in six months, the following: 6,650 lbs. *rhubarb root*, from Canton, 2,249 lbs. from London, 645 lbs., 788 lbs., and 185 lbs. also from London; 545 lbs. from Hamburg; 878 from Canton; 1075 from Marseilles; *Opium*, 931 lbs., 750 lbs. from Marseilles; 758 lbs., 156 lbs. from London; 2,940 lbs. *jalap* from Tampico; 875 lbs. and 3,400 lbs. from Vera Cruz; 1414 lbs. *gamboge*, from London; 1,400 lbs. *senna*, from Leghorn; *yellow bark*, 2,900 lbs. 1,875 lbs. from Bordeaux; 13,120 lbs. from Marseilles; *iodine*, 1,783 oz., 1,280 oz. from London; *gum myrrh*, 227 lbs., 412 lbs., 1,065 lbs. from London; 12,800 lbs. *Cinchona bark*, from Carthagena.

2. PRODUCTS UNITED STATES, 1848.*

TABLE, exhibiting an estimate of the value of the products of the labor and capital of the United States in the year 1848.

Descriptions.	Quantities.	Price.	Value.
Wheat.....	126,364,000	\$ 1 15	145,319,190
Indian Corn.....	583,150,000	59	344,058,500
Barley.....	6,222,050	65	4,044,332
Rye.....	32,957,500	65	21,418,475
Oats.....	185,500,000	35	64,925,000
Buckwheat.....	12,533,000	50	6,266,500
Potatoes.....	114,475,000	30	34,344,500
Beans.....	10,000,000	1 00	10,000,000
Peas.....	20,000,000	87 1/2	17,500,000
Flaxseed.....	1,600,000	1 20	1,920,000
Hay..... (tons)	15,735,000	8 00	125,880,000
Hemp and Flax.....	100,000	180 00	18,000,000
Tobacco..... (lbs)	218,909,000	04	8,756,000
Cotton.....	1,066,000,000	07	74,620,000
Rice.....	119,199,000	03	3,575,985
Sugar (including Maple).....	275,000,000	05	13,750,000
Silk Cocoons.....	400,000	2 00	800,000
Hops.....	1,566,000	09	140,967
Beeswax.....	789,525	21	165,800
Honey.....	23,685,750	10	2,368,000

* From the able report of the late Commissioner of Patents, Mr. Burke.

Molasses	(gallons)	9,600,000	28½	2,736,000
Wine		500,000	1 00	500,000
Pasturage	(annual value)			60,768,136
Value of the residuum of crops—Straw, Chaff and Manure				100,000,000
Products of the Orchard—Value in 1840		\$ 7,256,904		
Increase 25 per cent.		1,814,226		9,071,130
Products of Gardens—Estimated number 3,- 000,000—Annual value estimated at \$15 each				45,000,000
Product of Nurseries—Value in 1840		593,534		
Increase 25 per cent.		148,383		741,917
Sheep in 1848		25,000,000		
Wool	(lbs.)	60,000,000	30	18,000,000
Neat Cattle in 1848		18,714,482		
Swine, number in 1848		35,000,000		
Butcher's Meat—including Mutton, Beef and Pork		3,664,934,000	04	146,597,360
Value of Hides, Tallow, &c.				20,000,000
Increase of Neat Cattle in 1848, estimated at 3 per cent., of the sum in 1847, 449,147, valued at \$ 10 per head.				4,491,470
Horses, Mules and Asses—Number in 1840		5,419,586		
Increase 25 per cent. (labor not estimated).				8,129,350
Poultry—Value in 1840		9,344,110		
Increase 25 per cent.		2,336,102		11,680,512
Eggs, number consumed		1,084,300 000	½	5,421,500
Live Geese Feathers	(lbs.)	2,000,000	50	1,000,000
Products of the Dairy—Value in 1840		33,787,008		
Increase 25 per cent.		8,446,750		42,233,758
Milk—Value of.				20,000,000
Products of the Forest—including Timber, Furs and Skins.				22,250 000
Fire-wood		25,000,000	1 50	17,581,339
Capital employed in Commerce, Trade and Internal Transportation		\$ 400,000,000		
Profits at 6 per cent.				24,000,000
Manufactures—Products, value of.				550,000,000
Mines—Products of, including Iron, Lead, Gold, Silver, Marble, Granite, Salt, Coal, &c.				75,000,000
Bank Capital		212,000,000		
Insurance—Capital of.		not known.		
Profits of				20,000,000
Profits of money loaned on interest.				25,000,000
Rental of Houses and Lands				50,000,000
Professions—Profits of.				50,000,000

RECAPITULATION.

Total value of Crops		\$ 1,119,866,420
" " Orchards and Gardens		54,813,047
" " Live Stock and its products.		277,553,950
" " Products of Forests		59,750,000
" " Products of Fisheries		17,581,339
" " Commerce and Manufactures.		574,000,000
" " Mines		75,000,000
" " Banking, Insurance and Interest on Money.		45,000,000
" " Rental		50,000 000
" " Professions		50,000,000
Grand Total		\$2,323,564,758

3. THE LAST PATENT OFFICE REPORT.

In taking leave of the able gentleman who has presided for four years over this department of government, we can only express the hope that his successor will prove as efficient and energetic, and carry out the good works that have been begun.

We take the following interesting tables, &c., from Mr. Burke, who says: "This office is under great obligation to the intelligent gentlemen who have so promptly and fully responded to its inquiries. And particularly is it indebted to J. D. B. De Bow, Esq., of New Orleans, Charles Cist, Esq., of Cincinnati, B. P. Johnson, Esq., of Albany, M. B. Batchem, Esq., of Columbus, Ohio, J. Delafield, of Seneca county, N. Y., T. Marshall Painter, Esq., of Lucerne, Pa., and N. J. Wythe, Esq., of Cambridge, Mass., for interesting and valuable communications."

Year.	Number of applications.	Number of caveats.	Number of patents issued.	Amount received for duties and fees.	Balance carried to Patent fund, after deducting expenditures, exclusive of money paid for restoring models, &c.
1841.....	847	312	495	\$40,413 01	\$8,253 84
1842.....	761	291	545	36,505 63	5,292 20
1843.....	819	115	531	35,315 81	4,588 85
1844.....	1,045	180	502	42,509 26	6,164 79
Total	3,472	1,298	2,073	154,743 71	24,299 68
1845.....	1,246	380	511	51,976 12	11,680 49
1846.....	1,272	448	619	50,264 16	4,105 45
1847.....	1,531	533	572	63,111 19	21,232 84
1848.....	1,628	607	660	67,576 69	8,670 85
Total	5,677	1,968	2,362	232,028 16	45,689 63
	3,472	1,298	2,073	154,743 71	24,299 68
Excess	2,205	670	289	77,284 45	21,389 95

Statistical Bureaus.

In the pursuit of its statistical investigations, this office has keenly felt the want of means for obtaining accurate and reliable information concerning the great industrial interests of the country. No provision has been made by the general government for obtaining such information, except in relation to the foreign commerce of the country; and but very few of the States have adopted measures for obtaining authentic information in relation to their industrial interests. Massachusetts and Louisiana are in advance of most other States in their legislation upon these subjects. In the former State, very full returns are obtained, in small periods of a few years, if not annually, of its industry and resources; and in the latter, a bureau of statistics has been established, at the head of which has been placed one of her most intelligent and talented citizens.

A most interesting view of the vast resources of this great republic, would be annually exhibited, if all the States should follow the example of Louisiana and Massachusetts. The statesman and legislator, to whom the people commit the destinies of their common country, would then have at their hands ample material to aid them in the intelligent discharge of their momentous and responsible duties, without which they are like blind men feeling their way in the dark.

Cultivation of Sugar Cane, &c.

As a commencement of this system of investigation, I employed an intelligent and able gentleman, Charles L. Fliechmann, Esq., to visit Louisiana during the last season, to make inquiry into the condition and progress of the sugar culture in that State. He has accomplished, in part, the object for which he was sent, and has presented to me a most valuable report, which will be found in the appendix to the agricultural report, marked No. 2.

As the time which was allotted to him for the execution of the investigation committed to his charge, was not sufficient to enable him to complete his inquiries, it will be necessary for him to resume his labors during the approaching season. His report, although necessarily incomplete, it is believed contains much valuable information which will be interesting to the public at large, and particularly useful to the intelligent and enterprising citizens who are engaged in the sugar culture in this country. The circulars sent out from this office, soliciting information upon the subject of agriculture, were very full and minute in the inquiries which they embodied, and the replies to them. Many of them, equally minute, contain a large amount of valuable and interesting information, which will be found embodied in the agricultural report and appendix.

4. SEA AND RIVER SHORE OF UNITED STATES.

Col. Abert, of the Topographical Engineers, thus answers to the questions of government:

Question 1. "The extent of shore line of each of the rivers of the United States, as far as navigable for steamboats of the lightest draft now used, designating the extent of shore line of each principal river and its tributaries."

Answer. Shore line of rivers, to head of tide water, from Maine to Texas. The head of tide water is assumed as the limit of steamboat navigation, as impeding falls or rapids are usually encountered at that point, above which many of our rivers are adapted to steam navigation, but to what extent is not sufficiently known 10,501 miles.
 Shore line of rivers of Texas..... 1,210 "
 Mississippi (lower) islands and bayous..... 8,372 "
 Mississippi (upper) and tributaries..... 2,736 "
 Big Black, Yazoo, and bayous..... 1,190 "
 Red river and tributaries..... 4,924 "
 Arkansas river and tributaries..... 3,250 "
 Missouri river and its tributaries..... 7,830 "
 Ohio river and tributaries..... 7,342 "

Total miles, including both banks of rivers..... 47,355 "

Question 2. "The extent of frontier of the United States, bordering on the British possessions."

Answer. From the mouth of the St. Croix to the Pacific ocean, by treaty lines, 3,303 miles.

Question 3. "The extent of frontier of the United States, bordering on Mexico."

Answer. From the mouth of the Rio Grande to the Pacific ocean, by treaty lines, 1,456 miles.

Question 4. "Extent of shore line of the northern lakes, including bays, sounds, and islands."

Answer. American coast, or shore line..... 3,620 miles.
 British coast, or shore line..... 2,620 "

Total miles..... 6,240

PROGRESS OF THE SOUTHERN STATES.

1. SLAVE AND FREE NEGRO LAWS OF THE SOUTHERN STATES.

SOUTH CAROLINA.—We have had various inquiries for such a publication, from a great many quarters, and are determined to commence it. It will be seen by the letter in our present number, from an intelligent gentleman of Cuba, how anxious the people of that island are now to obtain information upon the subject, so as to regulate their own systems.

We shall ourselves prepare an abstract of the *Louisiana* slave laws, unless some other legal gentleman will relieve us of the task. We also invite contributions upon the slave laws of the other southern states from the Profession, and feel assured, they will in this way greatly serve our southern country.

We publish now a few pages, from an able pamphlet on the negro laws of South Carolina,

sent us by our distinguished friend, Hon. J. Bellon O'Neill, the author. It was prepared by request of "Carolina Agricultural Society." Our intentions are to publish the pamphlet in parts, in successive numbers of the Review, if the proprietor, Mr. John G. Bowman, of Columbia, who has the copyright, will permit. It will not certainly injure his sale, and will extend the usefulness of Judge O'Neill's labors.

The Status of the Negro, his Rights and Disabilities.

Section 1. The act of 1740, sec. 1, declares all negroes and Indians (free Indians in amity with this Government, negroes, mulattoes and mestizoes, who now are free, excepted) to be slaves: the offspring to follow the condition of the mother: and that such slaves are chattels personal.

Sec. 2. Under this provision it has been uniformly held, that color is *prima facie* evidence, that the party bearing the color of a negro, mulatto or mestizo, is a slave: but the same *prima facie* result does not follow from the Indian color.

Sec. 3. Indians, and descendants of Indians, are regarded as free Indians in amity with this Government, until the contrary be shown. In the second proviso of sec. 1, of the act of 1740, it is declared that "every negro, Indian, mulatto and mestizo is a slave, unless the contrary can be made to appear"—yet, in the same it is immediately thereafter provided—"the Indians in amity with this government excepted, in which case the burden of proof shall lie on the defendant," that is, on the person claiming the Indian plaintiff to be a slave. This latter clause of the proviso is now regarded as furnishing the rule. The race of slave Indians, or of Indians not in amity to this Government (the State), is extinct, and hence the previous part of the proviso has no application.

Sec. 4. The term negro is confined to slave Africans (the ancient Berbers) and their descendants. It does not embrace the free inhabitants of Africa, such as the Egyptians, Moors, or the negro Asiatics, such as the Lascars.

Sec. 5. Mulatto is the issue of the white and the negro.

Sec. 6. When the mulatto ceases, and a party bearing some slight taint of the African blood ranks as white, is a question for the solution of a jury.

Sec. 7. Whenever the African taint is so far removed, that upon inspection, a party may be fairly pronounced to be white, and such has been his or her previous reception into society, and enjoyment of the privileges usually enjoyed by white people, the jury may rate and regard the party as white.

Sec. 8. No specific rule, as to the quantity of negro blood which will compel a jury to find one to be a mulatto, has ever been adopted. Between one-quarter and one-eighth seems fairly to be debatable ground. When the blood is reduced to, or below one-eighth, the jury ought always to find the party *white*. When the blood is one-quarter or more African, the jury must find the party a mulatto.

Sec. 9. The question of color, and of course of caste, arises in various ways; and may, in some cases, be decided without the intervention of a jury. As when a party is convicted and brought up for sentence, or a witness on the stand objected to as a free negro, mulatto, or mestizo, in these cases, if the color be so obvious that there can be no mistake about it, the judge may refuse to sentence, or may exclude the witness; still, if the party, against whose color the decision may be made, should claim to have the question tried by a jury, it must, I apprehend, be so tried.

Sec. 10. There are three classes of cases, in which the question of color, and of course, of caste, most commonly occurs. 1st. Prohibition against inferior courts, or the tax collector. 2d. Objections to witnesses offered to testify in the superior courts. 3d. Actions of slander for words charging the plaintiff with being a mulatto.

Sec. 11. In the first class, free negroes, mulattoes and mestizoes, are liable to be tried for all offenses, by a magistrate and five free holders (except in Charleston, where two magistrates must sit), and of course, any person claiming to be white (over whom, if that be true, they have no jurisdiction), charged before them criminally, may object to their jurisdiction, and if they persist in trying him or her, may apply for, and on making good the allegation, is entitled to have the writ of prohibition. It seems if the party submits to have the question of jurisdiction tried by the Inferior Court, he will be concluded.

Sec. 12. The writ of prohibition is generally granted, nisi, on a suggestion sworn to by the relator, by any judge at Chambers, on notice being given to the court claiming jurisdiction; but if the fact be uncontroverted, or so plain as not

to admit of doubt, that the relator is white, the judge may at once grant an absolute prohibition. Generally, however, an issue is ordered to be made up on granting the prohibition, nisi, in which the relator is plaintiff, and on the jury finding the relator to be a free white person, the prohibition is made absolute.

Sec. 13. In this class, too, the tax collectors frequently issue tax executions for capitation taxes, against persons whom they suppose to be free negroes, mulattoes, or mestizoes ("free persons of color," as they are sometimes loosely called). If the person or persons against whom they be issued, be not liable to the tax, they may, on a suggestion, move for and have the writ of prohibition.

Sec. 14. In such cases, where, from the affidavits accompanying the suggestion, it appears that the relator or relators has or have been received in society as white, and has or have enjoyed the privileges of a white person, or of white people, I have uniformly made the order for prohibition to become absolute, if the tax collector did not within a given time, file his suggestions contesting the status of the relator or relators. This course has been adopted, because the tax collector has no jurisdiction over the person of the relator, and has no judicial authority whatever, to decide the question of caste. His execution is predicated of an assumed fact. He is, therefore, bound to make that good, before he can collect the tax. This course has been found extremely convenient, as it has cut off an immense amount of litigation. For, generally, the tax collectors exercise a sound and honest discretion, in pursuing only those cases where there seems to be no room to doubt the degraded caste of the relator or relators.

Sec. 15. Where, however, there is to be a question as to the color of the relator or relators, the court may, in its discretion, cast the burden of proof on the tax collector, or the relator. Generally, I think, it should be cast on the tax collector, as his execution is the first allegation of the color of the relator. As the issue may result, the writ of prohibition is made absolute or dissolved.

Sec. 16. In all the cases of the first class, the decision is conclusive; in all subsequent cases, civil or criminal. For the prohibition is in the nature of a criminal proceeding, operating *in rem*, and binds not only the parties, but also all the people of the commonwealth. So it seems, that any decision made in favor of the caste of the relator, as white, may be given in evidence in his favor.

Sec. 17. In the second class, the objection to the competency of the witness, makes the issue collateral, and it is tried *instantly*, without any formal issue being made up, and the finding is upon the record on trial. The verdict, in such a case, concludes nothing beyond the question of competency in that case. It, however, might be given in evidence for or against the witness, not as conclusive, but as a circumstance having weight in settling the question of status, in all other cases.

Sec. 18. In the third class, where jurisdiction is pleaded and found, it would seem to forever conclude the plaintiff from re-agitating the question. But, where the defense is as usual, that the defendant had good reason to suspect and believe that the plaintiff was, as he alleged, a mulatto, in such case, a finding of nominal damages sustains the defense, yet it concludes not the plaintiff from afterward averring and proving that he was white.

Sec. 19. Free Indians and their descendants, unmixed by African blood, are entitled to all the privileges of white men, except that of suffrage and office. The former, and of consequence the latter, has been denied to a pure Indian, living among the whites. The foregoing principle resulting from the case cited in the margin, is, I am persuaded, wrong. The term white ("free white man"), used in our constitution, is comparative merely: it was intended to be used in opposition to the colors resulting from the slave blood. The case should be reviewed, and I trust the decision will be reversed; for the case in which it was made, will always condemn it. The relator, the Rev. John Mush, was an Indian, of the Pawmunki tribe of Indians, in Virginia; he was a soldier of the revolution, he had as such, taken the oath of allegiance. He was sent out as a missionary to the Catawbas. He, however, did not reside among them; he lived among the white inhabitants of York District, where he had resided for many years. He was a man of unexceptionable character. Yet, strange to say, he was held not to be entitled to vote. If that decision be right, how long is the objection to prevail? When is the descendant of an Indian to be regarded as white? Is it, that he is not to be so regarded, until a jury shall find him to be white, on account of the great preponderance of the white blood? But the Indian blood, like that

of the white, is the blood of freedom; there is nothing degrading in it; and hence, therefore, the Indian and his descendants may well claim to be white within the legal meaning of our constitution.

Sec. 20. A Mestizo is the issue of a negro and an Indian, and is subject to all the disabilities of a free negro and mulatto.

Sec. 21. The burden of proof of freedom rests upon the negro, mulatto, or mestizo, claiming to be free.

Sec. 22. Under the act of 1740, 1st sec., 1st proviso, and the act of 1799, it is provided, if any negro, mulatto or mestizo shall claim his or her freedom, he may, on application to the clerk of the Court of Common Pleas of the District, have a guardian appointed, who is authorized to bring an action of trespass, in the nature of ravishment of ward, against any person claiming property in the said negro, mulatto or mestizo, or having possession of the same; in which action, the general issue may be pleaded, and the special circumstances given in evidence; and upon a general or special verdict found, judgment shall be given according to the very right of the case.

2. MOBILE AND OHIO RAILROAD.

To Sydney Smith, Esq., President Mobile and Ohio Railroad:

Dear Sir—Having made a partial reconnoissance of the country between the Ohio river and Mobile; and having organized and placed in the field four efficient parties of surveyors, who are now actively engaged in running the necessary lines to determine the best location of the railroad, it may be agreeable to you, and useful to your company, to receive from me some general remarks upon the practicability and character of the great work you have undertaken. These I am happy to make, in advance of a detailed report upon the results of the surveys, in consequence of the misapprehension existing along the route, and, to some extent, even in Mobile, in relation to the ability of the people to build the road at this time, and to its capacity as a labor-saving machine.

First. The country throughout the whole distance is of the secondary alluvial formations, exhibiting but few points of rock excavation, and these of the softest kind of limestone and sandstone. Its surface is moderately undulating, but where the road will naturally cross the dividing ridges does not exceed 250 to 300 feet above the nearest navigable waters of the Tennessee, or Tombigbee rivers. Nor will the road be, at the highest point, over 650 to 700 feet above the tide water at Mobile. Very little stone, fit for masonry, can be found; but materials for bricks and timber in the greatest abundance, are everywhere convenient and suitable for railroad structures. In fact, the country under examination, topographically and geographically, is very favorable for the construction and use of a railway.

Second. In consequence of the slight elevations to be overcome, and the otherwise general feasibility of the country for the railroad in the north and south direction, the gradients and curves can be made, by a careful location, of easy passage, so that the speed and effective power of the engines may be greater upon your road, other things being equal, than upon any other line of equal extent in the United States. Going south, we hope to have no gradients to exceed thirty feet per mile, or north, over forty feet; and the shortest curve not less than 1432 feet radius. With these natural facilities for construction, and the certainty of taking a fair portion of the immense traffic of the Mississippi and of its northern and eastern tributary valleys—also, the whole of the local business of the extensive agricultural country through which the road will pass—you can have no apology for building any other than a permanent, *first class* road—one as good as the best in the north-eastern states. With this view, a location, plans and estimates, will in due time be presented, which, if carried out, cannot fail to give the following results, viz:

Time of transit of passenger trains <i>through</i>	20 hours.
do. do. freight, do. do.	40 do.
Gross load of 20 ton engine going south on on max. grade of 30 feet.	400 tons.
Of which will be merchandise.....	236 do.
Gross load of same engine going north on max. grade of 40 feet.	330 do.
Of which will be merchandise.....	194 do.

On a road of this character, passenger fares will range from 24 to 3½ cents per mile, inversely to the distance traveled. Freight charges 1½ to 3 cents per

ton per mile, for agricultural products, salt, lime, plaster, &c., and $2\frac{1}{2}$ to 5 cts. per ton per mile for imported merchandise. All freight charges being proportioned directly to the value, risk, and bulk of the articles, and inversely to the distance transported.

The following table of comparative loads on different inclinations, will show the value of reducing the maximum gradients to the lowest practicable limit:

	LOAD ON ASCENT OF						
	Load. level. tons.	10 ft. p. m. tons.	20 ft. p. m. tons.	30 ft. p. m. tons.	40 ft. p. m. tons.	50 ft. p. m. tons.	60 ft. p. m. tons.
Gross loads 24 tons engines	1,000	672	502	400	330	280	243
Net loads of merchandise	587	396	296	236	194	166	142

Hence the cost of traction per ton on a load, compared with the gradients mentioned in the table, will be in the ratio of 1—1.49—1.98—2.49—3—3.53 and 4.13. Every person can see from this the importance of the low gradients as an element of cheap freights; also, of a *strong iron rail*, without which a smooth road surface cannot be maintained even on a level gradient.

Third. The great benefits of this road to the country to be traversed by it, will be fully proved by enabling the agriculturists of western Kentucky and Tennessee, and northern Mississippi and Alabama, to crop their fields and place their products in the Mobile market twelve to twenty days earlier than can be done from the states north of the Ohio; and also, by furnishing the citizens of Mobile and the planters of the whole cotton growing region of eastern Mississippi and western Alabama, with their supplies of provisions directly from the north, at all seasons of the year, and over an average distance of 200 to 400 miles, instead of 1500 to 1800 miles, as is now the practice, via the Ohio, Mississippi and Tombigbee rivers.

The soil on nearly four-fifths of the entire route, is, on the average, as rich and fertile as any in the western country, and, in consequence of its distance from market, is now but partially cultivated; that it will be thickly settled and greatly enhanced in value by your road cannot be doubted. Of this enhancement of value, I venture to give you the following estimate:

Miles.	Acres.		Average.
1st. each side of the road.....	450,000.....	\$5	\$2,250,000
2d.....	450,000.....	4½	2,137,500
3d.....	450,000.....	4½	2,025,000
4th.....	450,000.....	4½	1,912,500
5th.....	450,000.....	4	1,800,000
6th.....	450,000.....	4 0,000.....	1,688,500
7th.....	450,000.....	3½	1,565,000
8th.....	450,000.....	3½	1,462,500
9th.....	450,000.....	3	1,350,000
10th.....	450,000.....	2½	1,237,500
11th.....	450,000.....	2½	1,125,000
12th.....	450,000.....	2½	1,012,500
13th.....	450,000.....	2	900,000
14th.....	450,000.....	1½	787,500
15th.....	450,000.....	1½	675,000
16th.....	450,000.....	1½	562,500
17th.....	450,000.....	1	450,000
18th.....	450,000.....	¾	337,500
19th.....	450,000.....	¾	225,000
20th.....	450,000.....	¾	115,500
Pine region and ridge lands.....	2,500,000.....	¾	1,150,000
	11,500,000		\$24,769,000

Judging from the effect of railroads elsewhere upon the value of real estate, one-half of this increase will be realized in five years, and the whole within fifteen years after the road shall have been completed.

Fourth. Are the people of the country adjacent to the route sufficiently numerous and in condition to make the road in the next five years? I believe

they are; and could they all be induced to unite in contributing to the work by taking stock in proportion, respectively, to their taxable property, real and personal, the road would be completed in two and a half years, instead of five, or any longer period. In proof of this, it is only necessary to state, that there are at this time, not less than seventy-eight thousand men, white and black, living within two tiers of counties on the route. About sixty-three thousand of these are in the condition of laborers, while the other fifteen thousand are occupied in professional and mercantile callings, as large landed proprietors, or gentlemen of fortune and leisure—each and all able to pay for the labor of others. We may, therefore, consider the country capable of furnishing *continuously*, for all departments of the work, one-eighth of its entire manual strength, say 9750 men; and as many horses as may be needed. In two and a half years these men should work 625 days each, which will give in the aggregate 6,093,750 days' work; two-thirds of this labor will probably be required on the grading, bridges, and permanent fixtures of the road, and the remaining one-third will consist of foreign labor expended in making the iron and machinery, and transporting the same to the line. Without going at this time into a calculation of the actual amount of work to be done, which must be determined by the survey now in progress, I assume, for this argument, that about an average of 13,200 days' work of men, and 5,000 of horses, may be required per mile, to complete the road and stock it with buildings, cars and engines; making an aggregate for the whole route of 6,072,000 days' work of men and 2,300,000 days' work of horses. The manual portion being less than one-eighth of the present labor of the country contiguous to the route for the period of two and a half years. Let then the local and laboring people, with their cattle, build the roadway, permanent fixtures, and lay the track; and the 15,000 other citizens, who hold and control capital, furnish the iron and machinery.

This will be a simple application of the principle of associate labor of men and capital, which has been so vastly beneficial to the northern and middle states; the fruits of which are *honorable and useful employment, common interests, prosperity and happiness*, to all classes of the people.

In nature the ant and the bee beautifully exemplify the same beneficent idea. Apply it to your present enterprise, and every man interested will be astonished to behold how much can be accomplished in a short time, even during the waste days of a single winter. From what I have seen of the people of the interior, they are exceedingly anxious to have the road, and will be well disposed to associate for their portion of the work, as above suggested. They all know that "many hands make light work."

Fifth. The work of making the road belongs to the people who are to reap the benefits of it; at least *three fourths* of it; thereby creating a property upon which one-fourth of the entire cost may be borrowed for a time, if necessary or convenient, until the road, by invigorating industry of all kinds and producing a revenue, may entirely pay for itself. But, if what I have said of the labor of the country and the mode of combining it with capital in this work be true, there will be little need of borrowing. So long, however, as the idea is entertained of foreign aid in raising the first three-fourths of the stock, the completion of the road will be delayed.

Sixth. The route now under survey is that mainly recommended by Mr. Troost; passing through portions of Ballard and Hickman counties, Kentucky; Obion, Gibson, Madison, McNairy, Hardin and Hardiman counties, Tennessee; Tishamingo, corner of Pontotoc, Itawamba, Munroe, Lowndes, Noxubee, Kemper, Lauderdale, Clarke and Wayne counties, Mississippi; and Washington and Mobile counties, Alabama.

Another general route is worthy of particular consideration, and is as follows: diverging from the first route in Obion county, Tennessee; thence through portions of Gibson, Haywood and Fayette counties, Tennessee; Marshall, Fayette, Chickasaw, Choctaw, Winston, Neshoba, Newton, Jasper, Clarke and Wayne counties, Mississippi; and Washington and Mobile counties, Alabama; joining the other route again in the valley of the Escatawpa. These two routes, denominated the *Eastern* and *Western*, are the most favorable that the country presents, and the thorough examination now under way will enable me to report upon their comparative merits.

Very respectfully and truly, I am your obedient servant,
Columbus, Ken., Jan. 5, 1849. JOHN CHILDE, Chief Engineer.

3. SOUTH CAROLINA INSTITUTE.

We hail with delight the establishment of such an institute in our neighbor city of Charleston, and trust to see the example imitated everywhere. The able and lucid address before the Institute, by Messrs. Taylor, Walker and Thomson, shall have a place in the next number of our Review.

The South Carolina Institute, for the Promotion of Arts, Mechanical Ingenuity and Industry.—The first Annual Fair of the above Institute will be held in Charleston, commencing on Wednesday, 17th October next, and continue open during the week.

Specimens of Art, Ingenuity, Mechanical Skill and Industry, of every description, are solicited for the Exhibition, and *Premiums* will be awarded to those presenting the best specimens.

A list of the Premiums to be awarded will be published at an early day.

All those who intend sending articles for exhibition, will please give notice to the Committee of Arrangements, at an early day as possible, and every specimen sent will be carefully attended to by the Committee of arrangements.

Officers of the Institute.

WM. GREGG, President.

WM. KIRKWOOD, 1st Vice President, E. C. JONES, Secretary,

WM. M. LAWTON, 2d Vice President, L. A. EDMONSTON, Treasurer.

Directors.

Joseph Walker,

E. W. Edgerton,

C. D. Carr,

D. N. McIntosh,

G. N. Reynolds,

W. G. Desaussure,

H. D. Walker,

C. Y. Richardson,

J. H. Taylor,

L. M. Hatch,

F. J. Porcher,

Wm. Lebbey.

4. AGRICULTURE, COMMERCE, AND MECHANIC ARTS IN SOUTH CAROLINA.

Richard F. Reynolds, Esq., chairman of a special committee appointed by the Legislature of South Carolina, made a valuable report to that body, upon the propriety of appointing a regular "Standing Committee on Commerce," etc., in the Legislature. Mr. Reynolds deserves great credit for his exertions, in this respect, and in many others bearing upon the industrial progress of the South. His idea of a *Bureau of Statistics*, in South Carolina, as in Louisiana, is what we desire to see in all the states of the Union, very soon.

It is a fact scarcely to be credited, that whilst within sight of this building, there are beds of the noblest granite in the world, the very pillars of our Capitol gates, of similar material, have been brought from abroad—transported a thousand miles by sea, and more than a hundred miles by land; that whilst we have lime formations in abundance, the walls of our dwellings are cemented by like materials, brought from an equally distant region; that whilst we have iron, the very best in the world, gold, copper, lead, precious stones, white and variegated marbles, of fine quality and susceptible of the highest polish, freestone, slate, plumbago, chalk, lithic paints, sulphur, asbestos, porcelain clay, and many other mineral productions, which might be prepared for use, and rendered productive of great profit, they are suffered, for the most part, to remain in their natural state, unappreciated and unused. But a new era is breaking upon us, and we are beginning to avail ourselves of those natural advantages which Providence has placed within our reach. We have discovered that cotton can be manufactured at a much less cost here than at Lowell or Manchester—that whilst our labor is cheaper, we are supplied with the raw material at smaller cost, and that therefore we can, without the protection of federal tariffs, compete successfully with others in the markets of the world, and enrich ourselves with ample profits. It has become apparent, too, that mechanical pursuits of almost every description, can be conducted with greater profit here than in more northern latitudes, not only on account of the advantages arising from a more liberal dispensation of solar light and heat, but from the greater cheapness of the means of subsistence; and it is only necessary for capital, with her magic wand, to call into being those establishments which concentrate and economize mechanical labor, in order to render us entirely independent in this respect. And commerce, too—commerce is opening to us new avenues of wealth. Within a brief period we were consumers of northern flour; now we are the exporters of it to the extent of thousands of barrels, and it is only necessary for us to comply, by legislative enactments regulating its inspection,

with those imperative demands of foreign commerce, which the merchant suggests, and which he only can intelligently direct, in order to facilitate its sale in the markets which he has found for you. It is well known, that on all the flour now produced in this state, and sent to the sea board, an average loss of one dollar per barrel is sustained by the agriculturist or the miller, in consequence of non-compliance with the inspection laws of the world, which require the packages to be of peculiar character—their capacity perfectly uniform—and the qualities duly classified and certified—a loss which might be entirely saved, by decreeing those wholesome regulations against which the clamors of the ignorant are raised, because they impose an inspection tax, as it is called, of five cents per barrel. It is a fact so entirely notorious, as hardly to be worthy of reiteration, that southern flour is better than northern, and the only drawback to its profitable sale in foreign markets, is in consequence of neglect of those inspection laws which the merchant dictates, and the necessity of which is forced upon his convictions by actual experience of their importance. No wonder that your Judiciary Committee, who were charged with the consideration of a bill of this character, have felt themselves constrained to ask its transfer to another committee; and it will not be surprising if your Committee on Agriculture come to the conclusion that a bill of that sort is as far removed from the appropriate sphere of their duties, as of that of the Judiciary. It is a Commercial Committee you need for such matters, and if the membership of this House does not furnish merchants, the committee would be not the less able to arrive at an enlightened decision in all such cases, inasmuch as that class of citizens would place within their reach all such information as might be necessary or desirable. There is now no proper or recognized destination for such information.

The merchant, the manufacturer, or the mechanic, comes to the capitol—he looks into your Rules of Order, and finds that you have provided for the planter, the physician, and the lawyer, but that he is nowhere recognized there. A name and a place are denied him, and he feels that although his brethren of the legislature, who are sent up here to legislate for the good of all, are entirely disposed to mete out justice to him, yet he finds you unadvised of his requirements, and actually prejudiced unwisely and unjustly against him, in consequence of being unaware of his true position in the productive community. The lack of legislative encouragement and protection to industrial pursuits in this state, and the astonishing energy of at least one class of our artisans, which overcomes even the coldness and apathy of the legislative power, cannot be better illustrated than by some allusions to the lumber trade of South Carolina, in so far as it may be indicated by that comparatively small portion of it which finds vent at the Port of Charleston, and which present, to the eye of every one who desires the prosperity of the state, features as gratifying as they are astonishing, showing that in scarcely a single item of trade, in any part of this country, is an increase exhibited so remarkable as this. The following tabular statements exhibit the exports of lumber, foreign and coastwise, from the port of Charleston, for the last four years:

EXPORTS FROM CHARLESTON OF LUMBER AND TIMBER.

	1845.	1846.	1847.	1848.
<i>Exported to</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
Great Britain,	11,051	527,658	42,526	478,675
France,	14,000	75,991	50,051	85,750
North of Europe,	3,185	5,000	41,980	235,217
South of Europe,	150,319	109,562	1,142,259	1,186,217
West Indies, &c.,	1,017,613	710,883	1,448,198	1,776,451
Total to foreign ports,	1,196,168	1,429,094	2,725,014	3,762,310
Coastwise,	8,727,301	12,231,963	9,308,120	15,931,436
Grand total,	9,923,469	13,661,057	11,933,134	19,693,746

It is well known that about ten years ago the foreign export lumber trade of Charleston was in its infancy. The home market had become glutted, and the merchant sought a new outlet. Across the Atlantic he found purchasers who were eager for our pine lumber and timber, and this has led to the remarkable results which are now exhibited. The temporary falling off which has occurred at some of the foreign ports, has resulted from various causes, but principally in

consequence of the absence of that system of inspection of lumber which this legislature will be sought at no distant day to establish, and which although indispensable to the continued rapid increase of our foreign trade in that article, may be crushed in its inception, unless sustained by the enlightenment which would be brought to bear upon it by a Committee especially charged with such investigations. In the pine trees of South Carolina lies, hidden and unexplored, a mine of wealth as valuable as it is inexhaustible. The tar, pitch, turpentine, lumber and timber which they afford, and the demand for which in the European market, is of incalculable extent, render them the most valuable trees of our forest, and the day is not far distant, when, in consequence of a correct appreciation of their value, the pine forests which abound in every part of our state will be carefully conserved—they will be fenced and hedged around with safeguards from injury, and instead of beholding in our cotton fields thousands of beited trees, the mocking monuments of a reckless and disastrous policy, we shall jealously provide for their use and improvement. The experiments which have already been made in the production of such naval stores as the pine produces, have been attended with the most gratifying success. At one of the depots on the South Carolina Railroad, may now be seen more than five hundred barrels of turpentine, ready for shipment, which are but a portion of the produce of a single individual engaged in this new and profitable business. The results of these experiments clearly prove, that an average net profit of more than \$250 to the hand, is easily accomplished in the present state of the market, and this whilst the cotton planter is scarcely able to realize a net gain of more than \$50 to the hand. The proofs are at hand, that in North Carolina the production of a single laborer of great activity and industry—in a season unusually favorable for the yield of the pine—and with prices at a liberal rate, a net profit of more than \$700 has been realized. Do not facts such as these present inducements to a diversion of a portion, at least, of our labor from its customary unprofitable channels? But the inquiry will be propounded, what can legislation do for the accomplishment of all this? The answer is plain. We ask not for bounties or protections, other than such as every other interest craves. We desire only such legislation, and the means of directing it, as is granted to other pursuits. We ask only that sort of protection which legislation provides against the prejudices of the ignorant—only that sort of fostering care which will tend, by the diffusion of information respecting our true interests, to direct our energies into the most profitable employments. It may, also, be apprehended by some, that we desire to interfere, in matters of commerce, with those regulations of trade which properly belong to the federal government. Nothing is further from our wishes than this. We are content to leave the foreign and domestic commerce, and its regulations, precisely where the Constitution has placed it, but we do seek to regulate, and in so far as falls within the scope of state legislation, to facilitate and develop, that purely internal trade, which, in extent and importance, is infinitely beyond the former. The internal trade and commerce of South Carolina, with which the general government has nothing to do, and which has already been recognized and provided for, in some measure, by our own statutes, is infinitely greater in extent than all our foreign commerce. The interesting statistics which would correctly indicate this, may not properly be embraced within the limits of such a document as this, but sufficient illustration is found, for our present purpose, in a brief allusion to the trade, internal and foreign, of the United States. The exports of the United States, for fifty years past, show an average of less than \$7 to each inhabitant, and the imports, of course, are about the same—arising from that well established maxim in political economy, which declares that the imports of any country must correspond with the exports, except in so far as the former may be augmented by the price of freight to the foreign market, and the mercantile profit which accrues thereon. Now, let it be considered that all that we import from abroad, including luxuries, works of art, books, &c., do not average so much as \$7 to each inhabitant; and then take into view the average personal expenditure of each individual at home, for food, clothing, implements of trade, house furniture, horses, carriages, &c., all of which enter into the channels of trade before they reach the consumer, and some idea may be formed of the extent of that vast internal trade, the regulating and fostering of which falls legitimately within the province of state legislation.

The unavoidable haste, and consequent imperfection, of such a report as this,

precludes the display of such facts and considerations as would, if properly exhibited, prove the necessity of providing, in this way, some such organization as would lead to a correct understanding of these important matters, and the insufficiency of the data here presented only serves to show conclusively, that we have been heretofore neglectful of those means of information which are calculated to elicit correct apprehensions of our advantages and our duties.

We know not how strong we are at some points, nor how weak we are at others. The appointment of such a committee will soon lead to the establishment of an efficient

"BUREAU OF STATISTICS,"

which will be the means of collecting and disseminating statistical information touching all the interests of the state of the most valuable kind. It will surely hardly be necessary to vindicate before the legislature of South Carolina, the dignity and importance of those classes of citizens whose interests form the subject matter of the memorial. By common consent, the merchant, the manufacturer, and the mechanic, stand first and highest on the platform of civilization. The agricultural interest, with us at least, stands, it is true, at the base of our social fabric; but after all, agriculture is, in the scale of civilization, but one remove from the hunter state of the savage, whilst commerce, manufactures, and the mechanical arts, are the offspring of a high state of civilization, and it is in consequence of these that knowledge is diffused, and the devotees of the learned professions are called into requisition, and made the especial repositories of those treasures of information which were previously elicited by the demands arising from those occupations.

5. THE COTTON CROP OF 1843, ETC.

MOBILE, January 9, 1849.

Bright skies are now decidedly before us. The diminished consumption, for the past two years, of cotton, has left all markets bare of manufactures, and the restoration of confidence in France, will give the impulse to trade I predicted, which has not been exceeded before. This instinctive opinion, with the modified estimates of our crop, which the minds of all are becoming prepared for, will have a tendency to advance and sustain prices for the present season, and I might venture now the opinion, that prices another year will be better than they may reach this. The era of low prices is now, in my opinion, positively passed. The enormously increasing consumption in our own, and also in every other, country, with the impossibility of a corresponding increase of production, will do for the cotton planter, what his own prudence has scarcely warranted his expecting. But while I allow that prices may go handsomely up another year, I must again repeat, that there is no probability of its advancing to a figure that will make the return equal to the investments of the same amount of capital in the various manufacturing, coal and iron mining, or railroad and bank, stocks, which exist, or might be most advantageously created. In the South, and particularly Alabama, we have very many advantageous modes of investing.

To the end that concert of action might be obtained, and the concentration of intelligent thought upon the many and important interests of the cotton planter, I should consider a convention, or congress, of cotton planters, *annually* convened, to propose and consider their general welfare, as of vast and practical importance. It need not convene, as it did in Macon, in 1839, to keep prices up to what were at that time prevailing, 14@17c., but it would result in preventing the price from (under any circumstances) going so low as they have been in the past spring or fall. And low as cotton may be, there is, at even *one per cent.* annual profit on the capital invested, a large aggregate of capital accumulated in each year; and for the benefit of the common stock, that profit should be, and some besides, diverted toward other industrial interests. From our national and state legislatures we can expect nothing; and the total indifference of our government to the subject may be observed in the report of the Commissioner of Patents, when to this stupendous interest he devotes some tenth to a twentieth part of the notice he takes of objects comparatively valueless to this, and as usual represents Georgia as the largest cotton growing state—when *Mobile* alone exports more cotton than all the Atlantic states together, Georgia included. To which might be added, to represent the Alabama crop (according to the census of 1840), some 120,000 bales going from North Alabama down the Tennessee, and 50,000 bales going down the Chatahoochee. From this deduct some 60,000 bales, from the several eastern

counties of Mississippi, and you have the Alabama crop. Our bales weigh an average of 490 lbs., those of the Atlantic states 360 to 380.

Then organize a convention to meet annually, through which you will give and receive information by published reports, &c., that must be valuable. Its duties will suggest themselves to the mind of any one who will consider the subject, and I merely desire to raise my voice in support of the proposition.

Our cotton crop, I think, will not vary far from 2,350,000 bales. The fine prospects of July were destroyed in some measure, and I think the figures below will not be far from the mark.

Atlantic states,.....	575,000
Florida,	175,000
Mobile,.....	485,000...to...500,000
New Orleans,.....	1,000,000...to...1,050,000
Texas,	50,000
	<hr/> 2,350,000

The receipts are largely over those to the same period last year, but last year they held back dissatisfied with prices so much below those of September (10@ 12½c.). This year, in September, the fear of a 3,000,000 bag crop, and the improved prices then over those of April and May last, induced heavy and anxious shipments. Already the receipts are largely falling off.

I may submit a remark here, with regard to slave property, which may be of interest to some. It is known that in Virginia, in 1832, a proposition in one of the branches of her legislature to emancipate slaves in that state, in the usual way, lacked but one vote of being carried. It was a sudden proposition sprung upon the members without consultation with the people. The naked circumstance has induced the impression that slavery was held in that state, Maryland, and Kentucky, by rather a slight tenure. Upon careful inquiry on the subject, I understand that so far from this being the fact, *not one of the members*, who voted for that measure have ever been able to be elected to any office by a vote of the people, so uncompromisingly has it been condemned. And as an evidence of the appreciation of this property there, by their extended public works, factories, &c., a likely fellow is worth now in Richmond \$600, and instead of 3,000 being shipped from Baltimore south this year, as was done some years ago, probably 350@400 will cover the number. Light and information is being procured with regard to the condition of slaves, and contrasting their present with their original condition in Africa, or with free negroes any where, or with the corresponding class of laborers in France, England, Ireland, or any other country—their tasks are lighter, their food better, and their situation happier in every particular. And writers have not hesitated in England, of late, to advocate the institution; and the possibility, I suppose, exists of their restoring it in their destroyed colonies in the West Indies. Coincident with the fate of the Virginia politicians, it is a remarkable fact, that Lamartine and other distinguished *citizens* of France, who fashioned and carried the Republic through its embryo, and who seemed entitled to her highest honors, but who sanctioned the *emancipation of slavery* in their colonies, have been politically proscribed, and their names are scarcely mentioned. I submit this to show that the value of this property is not deteriorating.

By the improvement in cotton, your lands will be benefited, and I may add that the extraordinary increase of the precious metals, promised from the California mines, will enhance inevitably the value of your property, and tend to the swelling of the price of cotton and other articles of produce.

I am, very respectfully, your obedient servant,

GEO. G. HENRY.

6. COASTS AND KEYS OF FLORIDA.

S. R. Mallory, Collector at Key West, thus writes to Professor Bache of the Coast Survey:

"I deem it unnecessary to state the character and extent of the immense and increasing commerce, which passes through the narrow strait between the Florida and the Cuba and Bahama shores, as the published statistics of the Treasury Department upon the subject are familiar to you. In the navigation of this passage, and particularly during the summer months, when the trade winds are light and variable, and the rapidity of the gulf stream is believed to be accelerated, vessels

bound from the eastward to Cuba and the south-western Atlantic ports, are compelled to hug the Florida shore, not only to avoid the stream, but to find an anchorage in calm weather, which frequently continues several days, and both on their outward and homeward voyages, they keep the Florida shore aboard, regarding the iron bound coasts of Cuba and the Bahamas as most perilous. The Florida reefs, extending from Cape Florida to the Tortugas, a distance of about two hundred miles, subject to violent storms and the action of wayward currents, have always proved disastrous to navigators in that region. The number of vessels publicly known to strike upon them, including as well those extricated with as without the aid of wreckers, is not less than forty-eight per annum, or one in every seven days nearly; but it is confidently believed, from reliable sources of information possessed by the people of the coast, that many others strike upon the reefs and get off, of which no accounts are published. Twenty-two vessels, averaging about fifty tons each, are stationed at various points along the reefs, and pursue exclusively the business of relieving stranded property. Many of them are owned by the states of Connecticut and New York; they are expensively and substantially built and furnished, manned by strong crews of from ten to fifteen men, and commanded by skillful pilots, who have devoted their lives to the perilous profession of wrecking. These men are rarely heard of, and seem to be known only to those who have received assistance, or life itself, at their hands; and yet it is thought that few vocations are more essential to the commercial interests of our country, and that the Florida wreckers, in character and conduct, may compare favorably with any other class of seamen in the world. They are licensed by the judge of the United States district court for the southern district of Florida, under the act of Congress of the 3d of February, 1847. Their claims for salvage upon the property saved by them, are adjudicated in this court, and they are held to a strict accountability, not only for the property taken into their possession, but for their personal deportment toward the recipients of their services. The value of the property stranded on the reefs and carried into Key West, during the present year, cannot fall short of one million of dollars. During some years it far exceeds this amount, and the value of all the property which strikes upon them may be safely estimated at two millions of dollars per annum. During the year 1846, there were fifty-five vessels stranded and carried to Key West in distress, the aggregate value of which, with their cargoes, was \$1,624,800. The amount of salvage decreed to the wreckers was \$108,992, and the total amount of expenditures at Key West by these vessels and cargoes, was \$213,423. Of these fifty-five vessels, eleven were owned in New York, twelve in Maine, seven in Massachusetts, two in Connecticut, two in Rhode Island, five in Pennsylvania, one in South Carolina, five in Florida, and ten in foreign countries.

7. THE COTTON TRADE.

The Boston Journal gives the subjoined statistics in relation to the Cotton trade. The table shows the amount imported into England during the following periods:

Years.	Pounds per year.
1771 to 1795.....	1,170,181
1771 to 1780.....	6,122,717
1771 to 1790.....	19,105,547
1791 to 1800.....	31,341,373
1801 to 1810.....	69,372,179
1811 to 1820.....	105,571,546
1821 to 1825.....	105,687,033
1826 to 1845.....	351,700,000
1846.....	588,000,000
1847.....	439,000,000

In twenty years, from 1826 to 1845, of every 10,000 bales worked up:

England used.....	5,700 bales.
France.....	1,700 "
Holland and the North of Europe.....	800 "
Trieste and the South of Europe.....	450 "
United States.....	1,500 "

No particular account was kept of the amount used in England from 1705 to 1770. In 1832, the amount used in that country was 277,000,000 lbs., and the United States now use equal to that amount. During the twenty years specified

above, it will be seen that the amount used in France, exceeded that used in this country. The United States now use more than France.

The prices of upland cotton in 1808, in England, was 72 cents per lb.; in Amsterdam, \$1.44 per lb., and in Havre, \$1.92 per lb.

In the years 1845-6, England used 1,630,000 lbs., at a cost of \$167,000,000, and gained in manufacturing, \$412,000,000. Of which, exported to foreign countries, \$359,000,000; used at home, \$220,000,000 value. Whole value manufactured in three years, \$599,000,000.

The amount of cotton exported from the United States in the year 1836, was valued at \$71,284,925, and would have taken more than one hundred tons of gold, at £3 17s. 9d. per oz. to pay for it.

8. SUPPLY OF COTTON 1848-9.

The following from the London Economist is deserving the consideration of our planters:

MANCHESTER, April 12, 1849.

Sir—As I have made free use of the cotton statistics contained in your last number, I think it but civil to you to send you the result of the calculation.

My inquiry has been to find how far we are likely to be overwhelmed with 2,600,000 bales from America, supposing all other countries to send us the same quantity as last year. The Brazilian and other imports I have taken from Hollinshead, Tetley & Co.'s circular, dated Dec. 29, 1848, and have added 30,000 bales to it for imports into London and Glasgow from those countries. The whole growth of American being taken, requires no addition.

The summary of the whole is, that the whole growth of cotton, at the present rate, will go into consumption, and that the stock at the end of 1849 will be more likely to be reduced than increased.

According to the tables in the Economist of April 7, 1849, it appears that—

	1848-'49	1847-'48.
The number of bales of cotton taken for consumption in the U. S. of America, from Sept. 1, 1848 (date of the New York cotton statement), to March 13, 1849, is	bales.	bales.
America has therefore consumed 323,626 bales in 194 days. If 194 days, 323,626 bales; 7 days, 11,677 bales weekly.	323,626	269,595
Exported from the U.S. of America to all other countries, omitting Great Britain, between September 1, 1848, and March 13, 1849—194 days.	307,757	358,659
If 194 days, 307,757 bales; 7 days, 11,105 bales weekly.		
Cotton exported from Great Britain to other countries, between Jan. 1, 1849, and March 31, 1849—90 days.	51,200	19,500
If 90 days, 51,200 bales; 7 days, 2,982 bales weekly export.		
Consumption of cotton in Great Britain between Jan. 1, 1849 and March 31, 1849—90 days.	411,814	326,429
If 90 days 411,814 bales; 7 days, 32,030 bales weekly consumption.		

	Bales.
Weekly consumption of cotton in the U.S. of America.	11,677
Weekly exports from America to other countries, omitting Great Britain.	11,105
Weekly exports from Great Britain to other countries.	3,982
Weekly consumption of Great Britain.	32,030

Weekly consumption. 58,794

If 1 week, 58,794 bales; 52 weeks. 3,057,288

Estimated growth of the U. S. of America.	2,600,000
Import of Brazilian cotton into Liverpool in 1848.	100,200
Import of Peruvian do. do.	1,896
Import of West India, Carthagens, &c. do.	4,161
Import of Egyptian do. do. do.	27,920
Import of East India do. do. do.	136,012

Import into London from other places, omitting the United States—
suppose..... 30,000

Total supply of cotton for 1849..... 2,900,090

On the supposition that the present rate of consumption should be
maintained in England, America, and on the Continent of Europe,
for the remainder of the year 1849, the requirement would be... 3,057,288
The estimated growth of cotton available for the year 1849, is..... 2,900,090

Deficiency in bales..... 157,198
I am, sir, yours, very respectfully, H. HEYCOCK.

THE PUBLISHING BUSINESS.

I. PERIODICAL PUBLICATIONS.

1. <i>Southern Quarterly Review</i> ,	Charleston,	Vol. XV,	\$5.00 per annum.
2. <i>North American Review</i> ,	Boston,	" LXVIII,	5.00 "
3. <i>Hunt's Merchants' Magazine</i> ,	New York,	" XX,	5.00 "
4. <i>Southern Literary Messenger</i> ,	Richmond,	" XV,	5.00 "
5. <i>Western Journal</i> ,	St. Louis,	" II,	3.00 "
6. " <i>Plough, Loom and Anvil</i> ,"	Philadelphia,	" II,	3.00 "
7. <i>Banker's Magazine</i> ,	Baltimore,	" III,	3.00 "
8. <i>New Orleans Medical Journal</i> ,	"	" V,	5.00 "
9. <i>Charleston " "</i>	"	" IV,	4.00 "
10. <i>Silliman's Journal</i> ,	New Haven,	"	5.00 "
11. <i>Western Journal of Boatmen</i> ,	Cincinnati,	" I,	2.00 "
12. <i>Rail Road Journal</i> ,	New York,	" XXII,	5.00 "
13. <i>Mining Journal</i> ,	Boston,	" II,	3.00 "
14. <i>Ethnological Journal</i> ,	London,		
15. <i>Literary World</i> ,	New York,		3.00 "
16. <i>Simmond's Colonial Magazine</i> ,	London,		6.00 "
17. <i>Republication Foreign Reviews</i> ,	New York,		
18. <i>Monthly Law Reporter</i> ,	Boston,	" I,	3.00 "
19. <i>Franklin Institute Journal</i> ,	"	" XLVII,	5.00 "

These leading periodicals are all on our exchange list, and are regularly received. The *Southern Quarterly* is now under the editorial charge of that accomplished gentleman and scholar, William Gilmore Simms of South Carolina, and already exhibits the evidences of his ability. For the honor of the South we wish the work perpetual. The *North American* needs no eulogium from our hands, occupying the prominent position and fame that it does. Mr. Hunt's *Magazine* continues to win golden opinions in Europe as well as in our own country; and among its ablest papers are those from the pen of Thomas P. Kettell, Esq., of New York. We always read the *Literary Messenger* with the liveliest interest. In its character it is almost alone in our country. Mr. Thompson has done great credit to the literature of the South. In the last number, Lieut. Maury contributes an excellent paper upon the projected routes to the Pacific ocean. The *Western Journal* at St. Louis continually improves in appearance, size and matter; and from its location has the widest field. Skinner of the *Plough, Loom and Anvil*, is a veteran in agricultural matters and has done as much good in their behalf as any other man in the Union. Though we like not the theory of his work, there are hundreds and thousands who do, and should sustain it liberally: *audi alteram partem* in any case. We have often commended the *Banker's Magazine* as deserving the support of the bankers and liberal minded merchants throughout the Union. Dr. Hester has lately become sole editor of the *New Orleans Medical Journal*, and is continually adding to its interest. We congratulate our neighbor on his success. Dr. Fenner is one of his most constant and valuable contributors, and was one of the founders of the Journal. The *Charleston Medical Journal* seems to lose nothing in ability or interest. Every person interested in the progress of science will of course read *Silliman's Journal*. The old series of fifty volumes should fill a niche in every respectable library. The *Boatman's Magazine* is a new enterprise by Mr. Embree, and the object is to disseminate knowledge about our Western boats, boatmen, and navigation. The *Rail Road Journal*, formerly conducted by Mr. Minor, has passed into the hands of H. V. Poor, who spares no labor in elevating its character. The important interest of mines and miners is well represented in the *Mining Journal*. The *Ethnological Journal*, conducted by Luke Burke, Esq., is one of the profoundest publications in any country, relating to the physical history of Man and the Races. We have intended, for some time, paying our re-

pects to the Messrs. Duyckinck, who have succeeded Mr. Hoffman in the *Literary World*. They have made it one of the most interesting publications in the world to men of letters, and deserve the most abundant success. In it we get a faithful record of all the late publications in every country. Somehow or other, of late, our exchange with *Simmond's Colonial Magazine* has been stopped. We desire greatly to renew it, from the value we set upon that admirable statistical journal of the British colonies. We may say the same of Messrs. Leonard, Scott & Co.'s New York republication of Blackwood, Edinburgh, London Quarterly and Foreign Reviews. They have not been received by us for some time. The subscription price for the four works is but \$10 per annum, about one-third of the English price.

It is our intention regularly to notice our exchanges, as a matter which must be of interest to every reader of the Review.

2. LATE ADDRESSES.

- | | | |
|--|----------------------------------|------------------------|
| 1. Address before Mechanics' Institute, | New York, | Hon. Z. Pratt, 1849. |
| 2. " " Franklin Library Society, | " | " " " |
| 3. " at the Dedication of the Athenæum, | Baltimore, on | |
| | " Commerce, Literature and Art." | Brantz Mayer, Esq. |
| 4. " before Young Men's Library Association, | Cincinnati, O.— | |
| | " Cincinnati and her Destiny." | Governor Bebb. |
| 5. " " New England Society of Louisiana, | | Hon. S. Thacher. |
| 6. " " State Agricultural Society, South Carolina, | | Hon. R. F. W. Allston. |
| 7. " on the opening University of Mississippi, | | Hon. Jacob Thompson. |
| 8. " Inaugural, as President Univ. of Mississippi, | | Geo. Fredk. Holmes. |
| 9. " before Cincinnati Mercantile Society. | | Elwood Fisher. |

All who know Mr. PRATT, are acquainted with the strong practical character of his mind, and the interest he takes in everything tending to advance the condition of the working classes. He is one of the most prominent and useful men in the State of New York. It is our intention to make some extracts from Mr. MAYER's eloquent production. Governor BEBB is enthusiastic about the destinies of Cincinnati. We shall exhibit hereafter many of his views. Our acquaintance with Judge THACHER dates from his visit here last season, to deliver his address. The prevalence of a fearful epidemic, at the time, was unfortunate. The address is a vindication of New England. Mr. ALLSTON is one of the most liberal agriculturists of Carolina, and is the author of one of the ablest memoirs upon rice, yet given to the world. Our friend GEO. FRED. HOLMES, whom we have known for many years as an erudite scholar, will preside well over the Mississippi University. His inaugural is an admirable paper, and has been extolled in the highest terms, by the Southern Literary Messenger, which we indorse. Mr. FISHER's address is a triumphant vindication of the South from the aspersions of the abolitionists and others, and shows that this portion of the Union is, if anything, the most prosperous. The arguments are powerful, and are well sustained. Hundreds of thousands copies of the address have been printed, and we shall soon present it to our readers.

3. REPORTS, ETC., TO CONGRESS.

1. *Vattemare's International Exchanges.*
2. *Secretary of Treasury, 1848.*
3. *Coast Survey in regard to Florida, 1848.*
4. *Professor Baché on Coast Survey, 1848.*
5. " " *Weights and Measures, 1848.*
6. *Col. Abert on Commerce Western Lakes.*
7. *T. Butler King on Pacific Steamers.*
8. *J. D. Westcott on Everglades of Florida.*
9. *Aaron H. Palmer, "Memoir regarding East India Commerce."*
10. *Geological Survey of Missouri.*
11. *Fremont and Emory's Explorations.*
12. *Report Commissioner of Patents on Steam Explosions and Patent Laws.*

On several occasions we have called attention to Mr. Vattemare's system of Exchanges between governments, of products in literature, arts, science, &c. It has obtained favor in most of the States. We intend an effort to get our next Legislature to unite in the movement. Mr. Walker's closing report, as *Secretary of the Treasury*, is one of the most interesting public documents for a long time. We were pleased to see the triumphant vindication of Prof. BACHÉ, in the last Congress, from the attacks of Mr. Benton and others. The speech of Jefferson Davis of Mississippi, in this respect, was powerful and irresistible. PROF. BACHÉ's works are an honor to the science of our country. We wish we had time to analyze the reports now. The one on *weights and measures* will serve us much in the preparation of an article on that interesting subject. From the report of Col. Abert on *Western Lakes*, we shall hereafter extract largely, as we have referred in the present number of the Review to the distinguished labors of Mr. King, regarding our *Pacific commerce*, etc. Mr. Westcott, on the *Everglades of Florida*, is at home. His labors make almost a volume, from which we shall

be able to prepare a paper of great interest to our readers. But of this hereafter. We would also acknowledge Mr. Yulee's labors in respect to a *rail road across the Florida peninsula*, but have not the necessary information now. Mr. Palmer proposes the establishment of an Eastern or Oriental agency, and gives a great variety of interesting matter in regard to eastern countries. He proposes a volume upon these subjects. The Historical Society of Missouri petition for a *geological survey* of that State. These surveys should be everywhere more common. Some years ago, we had a partial one in Louisiana, but the manuscript report was not printed, and is *lost*. Thus are our affairs often managed, though the people pay. It is unnecessary to refer again to the North Western Explorations, having sufficiently noticed them in our introductory article. Mr. Burke's report on *steam explosions* will afford matter hereafter.

We acknowledge our indebtedness to the various gentlemen above for their reports, and also for similar courtesies from Hon. H. Johnson, S. Dowas, E. La Sere, Lieut. Maury, etc., etc.

4. LATE BOOKS, ESSAYS, &C.

1. *Western America*, by Charles Wilkes, U. S. N.
2. *Notes of Travel in California*.
3. *Chambers' Miscellany*, Monthly.
4. *Mobile and Ohio Rail Road*, F. B. Clarke, Mobile.
5. *Reports and Catalogue Young Men's Library*, Cincinnati.
6. *Cultivation of the Tea-Plant*, by Junius Smith, LL. D.
7. *Vital Dynamics*, by Dr. Dowler, New Orleans.
8. *Girardin on Dramatic Literature*: translated by R. G. Barnwell, New Orleans.
9. *Arrest of Aaron Burr*, by A. J. Pickett of Alabama.

75 c.
25

J. B. Steel, Camp street, has the two first works for sale, and receives all the various publications of the Messrs. Appleton of New York. We commend those on California to all desirous of emigration. Mr. Morgan is agent for *Chambers' Miscellany*: Gould, Kendall & Lincoln, Boston, publishers. The work is well known. We shall give publication, whenever it is possible, to the able report of Mr. Clarke on the *Mobile and Ohio Rail Road*, illustrated by his map, if we can get it. He will please inform us. The Young Men's *Mercantile Society* at Cincinnati, is one of the most prosperous of its kind in the Union. We thank the Society for the following resolution they have sent us:

"MERCANTILE LIBRARY SOCIETY, CINCINNATI, JANUARY, 1849.

"Resolved, As the sense of the Mercantile Library Association of Cincinnati, that *De Bow's Commercial Review* of the South and West supplies an important desideratum in the mercantile literature of this great western valley; that the comprehensive views and practical attainments of Professor De Bow are special qualifications for conducting such a periodical; and that this Association very cordially recommend the *Commercial Review* to general favor and the special patronage of our mercantile community."

Mr. Smith's pamphlet on the *Tea-Plant* is a curious and instructive paper. He maintains that the United States must become yet a great tea raising country, and selects the upper parts of South Carolina as the most favorable sites. We intend, hereafter, an abstract of his paper. The translation of Girardin's *Dramatic Literature*, by our amiable, accomplished and intelligent friend, R. G. Barnwell, Esq., of this city, and formerly of South Carolina, has only reached us in the proof-sheets. We watched the progress of our friend's labors with great interest, and now congratulate him upon their consummation. As soon as the work is regularly published, we will give it an elaborate notice. We shall extract largely from Dr. Dowler's pamphlet in this or the next number. Col. Pickett's pamphlet regarding Burr's arrest, is an extract or chapter from his forthcoming work upon the *History of Alabama*. It is well written, and gives much new and interesting information upon the subject of the arrest, which, it appears, took place in Alabama. We anxiously await the history itself.

5. EDITOR'S NOTE.

1. With the experience of three years and after a temporary suspension, we have recommenced the *Commercial Review* upon a far better basis than ever, with an increased subscription list, with good publishers and the removal of prominent difficulties. If our friends and the South and West generally, stand by us, *our success is established, and the perpetuity of the work secured*—a matter of the utmost importance to the whole of these regions.

We never knew the number of our friends until the hour of need. In answer to our circular, Dr. Winfree of New River, sends the amount of \$60 in *new subscriptions*; Mr. Miles McGehee says, "I will bind myself for ten new subscribers, and will pay you \$50 annually; and if I can get the number, will furnish you with the names, and shall also exert myself fur-

ther." Judge Hopkins of Mobile: "I inclose herein *twelve new subscribers*." R. F. W. Allston of South Carolina: "I inclose you *eight new subscribers*. I trust I may be able to remit to you soon, five or six years in *advance* of my individual subscription." Ex-Governor Hammond of South Carolina: "It is a disgrace to the South if your Review should fail. It is not that our people do not pay enough to support all truly southern papers and periodicals. Unfortunately, they are seduced by agents of all sorts of trashy publications, &c., &c." Robertson Topp, Esq., Memphis: "I am with you for the South, and will assist you in getting subscribers." In addition to these, there are a great many others whom we will notice hereafter as they deserve. Among others, Col. W. S. Hamilton, Bishop Polk, etc. We will publish a faithful list.

Professor De La Torre of the Royal Society, and a leading gentleman of Cuba, writes as follows: "I send you some questions of the *Royal Economical Society of Cuba*, which have been confided to me by the planters of the island. To whom could I more appropriately apply for answer, than to the able editor of the most complete Review in America? I hope you will answer the queries in successive numbers—also giving us a paper upon *Slavery and the Slave Laws* in yours and the other Slave States, and publishing whatever you can upon *coffee, rice, maize, cotton, wheat, wax, timber or lumber*. You may calculate upon the *subscription of more than one hundred persons in Havana*, who have expressed to me a desire that a place may be designated where they may subscribe, etc., etc."

We intend digesting the letters that are received. We have one from Mr. Ballustier, American Consul at Singapore in the *East Indies*, who says the articles on sugar, published by us, "have produced a revolution in its culture there."

One of the difficulties which the Review has met with is, that subscribers *do not all pay promptly*. Is this fair? Will they wait for the call of a collector, which costs us large commissions, when the opportunities of remitting by mail are so frequent?

We wish that those of our subscribers who can afford it, would take two or more copies for themselves, or pay several years subscription in advance. In addition to our labor, we have already lost a large sum by the Review. It is our hope hereafter, to make it up from the excellent publishing arrangements we have been fortunate enough to make, and the strong friends of the Review.

6. TO CONTRIBUTORS.

The able article on the *Falley and Waters of the Mississippi*, by Mr. Stein of Mobile, has been received, and will appear in our next number. Col. Hamilton's article will also appear, and Mr. Cooke's of St. Louis, and Hamilton Smith's, Esq., of Louisville, on the *Cotton Manufacture*, etc. We regret that these could not appear in the present number. We shall publish Hammond's unanswerable "*Letters on Slavery*," and Ellwood Fisher's "*North and South*," and an elaborate paper on "*Slavery*," now on our desk. We have a great variety of additional matter, and have engaged many new and able contributors for the Review. John M. Cardoza of Charleston, will soon be a *regular correspondent*.

7. TO THE PLANTERS.—SUGAR AND COTTON.

The importance of an AGENCY in New Orleans in connection with the Review, to aid the planters in the *purchase and sale of estates*, has frequently suggested itself. We have determined to start it. As the Review circulates largely in all the Southern and Western States, and is now getting a Northern circulation, planters will have an opportunity of offering their estates to the best advantage. They will be charged for the advertisement of estates, according to the space occupied and time advertised, *on reasonable terms*, in the pages of the Review, as will be agreed upon. When sales are effected through the AGENCY, the usual commission will be charged. *Editorial notices* will be called to the estates. Messrs. H. Weld & Co., publishers of the Review, able and energetic business men, will take *exclusive* charge of this department. In the present number we call attention to a large plantation in Attakapas, Louisiana, among our advertisements.

IF All letters relating to the business of the Review will be directed to Weld & Co., New Orleans; all relating to editorial, to J. D. B. De Bow, care of Weld & Co., Publishers Commercial Review, New Orleans.

THE COMMERCIAL REVIEW.

Vol. VII, Old Series.

AUGUST, 1849.

Vol. I, No. II, N. S.

ART. I.—THE WATERS AND VALLEY OF THE MISSISSIPPI.

REVIEW OF THE REPORT OF DR. M. W. DICKESON AND ANDREW BROWN, A. M., ON THE RIVER MISSISSIPPI. TO THE AMERICAN ASSOCIATION FOR THE PROMOTION OF SCIENCE. 1848.

1. THE aggregate quantity of water discharged by the Mississippi is 14,883,360,636,880 cubic feet.*

1. The mean annual quantity of water³ discharged by the river Mississippi, may be estimated at 33,732,864,000,000 cubic feet; the extent of the Mississippi valley being 1,210,000 square miles.

The quantity of water which a river discharges per second when at its highest stage, is, according to Prony, equal to the number of cubic meters which we obtain by dividing the superficial area of the valley in square meters by five millions.

In American measure for the Mississippi valley, it would be 22,141,000 cubic feet per second, while the above mean annual quantity of water discharged has been estimated at 1,069,661 cubic feet per second, which is only one-twentieth part of that which is discharged by the river, at its highest stage.

The above adoption of Prony is however too small for rivers in mountainous countries.

The supply furnished to the river Mississippi is, therefore, from each square mile of valley at the highest rise of the river, about 18 cubic feet; and for the mean annual quantity of water discharged by the river, the supply from each square mile is estimated at about 0.88 cubic feet.

2. The velocity assumed for the waters at the several stages of elevation, which constitutes an essential element in the calculations, is not that of the central current, but the mean of the lateral quantity, obtained by many and repeated experiments and computations, which give a mean amount very sensibly less than the central, and which are variable under varying conditions.

But it must be observed, that while these sensible variations of current exist in the lateral expansion of the waters in the river, it has proved impossible to detect any appreciable difference of velocity in their ver-

* In every instance with the passages marked 1. 1., 2. 2., 3. 3., the first in order is from the Report of Messrs. Dickeson & Brown, and the next our comments.

tical quantity. It is no unusual thing for very tall trees to float down the deepest part of the river in a perfectly perpendicular attitude, caused by their butt ends being of greater specific gravity than the water, while their tops or upper ends are so buoyant as often to project as much as fifteen or twenty feet above the surface of the water.

They are found to be at all times transported with the same velocity as the surface current, and while they are thus floating in a vertical position, their lower ends approximate the bottom so closely that they often strike the protuberances projecting therefrom, by which they are thrown down at such angles as often to make their tops disappear below the surface until they have surmounted the obstruction; and when such is the case, they at once erect themselves as before.

The observations made by these gentlemen, lead them to the conclusion, that in a descending aqueous fluid there is no appreciable difference of velocity in the vertical quantity, but that it is equally the same at top or bottom, for the reason that the superincumbent pressure urges forward the under-stratum to the point of least resistance, with the same acceleration of speed which the incumbent water itself may have acquired.

2. In a regular and straight river the greatest velocity of the water is in the middle, and decreases toward the bottom and sides.

The adhesion of the water to its bed and the cohesion of the particles to each other, cause those lying nearer to the sides of the bed to be retarded in their motion, and hence, to flow slower than the more remote. For this reason the velocity diminishes from the surface downward to the bed, and is least near the sides or at the bottom.

Let the velocity of the water at the surface of a river be four feet, and the depth sixty feet, we have, according to Prony, the mean velocity of this vertical depth $0,915 \times 4 = 366$ feet, and that at the bottom $0,83 \times 4 = 3,32$ feet.

The rod of Cabeo is generally used for measuring the mean velocity of a vertical depth. It consists of a cylindrical rod of tin, which is divided into feet, and which can be loaded at its lower end with lead, so as to sink it near the bottom, without touching it during the experiment. The rod extends a few inches above the surface of the water in order that it can be seen by the observer without being affected by the wind.

The mean velocity of the water in a cross-section of a river we obtain by dividing the discharged quantity of the water per second by the area of the section.

The mean velocity of a cross-section is different from that of a vertical depth of water, because this is only the mean velocity of a line, while the other is that of a plane.

3. The Mississippi valley is found to contain a superficial area of very little short of fourteen hundred thousand square miles. The inquiry, therefore, here suggested itself, what may be the relative difference between the annual quantity of water falling into this valley and the annual quantity discharged out of it by the river Mississippi. It is found by an examination of the Meteorological Register of the late Dr. H. Torly, of Natchez, that the mean annual quantity which falls at Natchez, is between fifty-five and fifty-six inches; but as such has been taken at the southern extremity of the valley, it may be regard-

ed as an over estimate for the whole area. The mean quantity is, therefore, assumed to be fifty-two inches, and then, by calculation, we will have 169,128,960,000,000 cubic feet, as the quantity which falls annually in the whole valley, which is within a fraction of being twelve times the quantity of that which is discharged by the river.

3. The extent of country which the Mississippi river and its tributaries drains, is, according to De Bow's Commercial Review, vol. IV, page 37:

	Square miles.
Valley of the Ohio,.....	200,000
“ “ Mississippi proper,.....	180,000
“ “ Missouri,.....	500,000
“ “ Lower Mississippi,.....	330,000
Area,.....	1,210,000

The mean annual quantity of water which falls in the valley is not every year the same, and it decreases in general with the distance from the sea.

The river Mississippi would be an ombrometer on a large scale, if correct observations were made of the height of the surface of the river during the year, and the comparison of several years would show in how far the quantity of rain had remained constant.

The mean annual quantity of water which falls in the whole valley, drained by the river Mississippi, may be assumed, according to Berghaus & Forry, at 36 inches, and then by calculation we will have $5280 \times 5280 \times 1,210,000 \times 3 = 101,198,592,000,000$ cubic feet, as the quantity of water which falls annually in the whole valley, of which one-third is assumed to be discharged by the river.

From the measurements and calculations of Arago, Hagen, &c., it appears that the quantity of water which is discharged by the rivers in Europe, is, in general, hardly one-half of that which falls as rain or snow in the whole river valley, and that the rivers owe their origin to the atmospherical precipitation. Besides, it is well known that agriculture is far more extended in Europe than in the valley of the Mississippi.

4. There are but two ways by which all this immense quantity of water can make its escape from the valley; one of which is by the course of the river into the gulf of Mexico, and the other by evaporation. Hence, we perceive, that there is but one relative part of this quantity passing off by the river for every eleven parts which are exhaled by the atmosphere; or, in other words, one-twelfth by the river and eleven-twelfths by evaporation.

4. There are but two ways by which all the immense quantity of water can make its escape from the valley of the Mississippi, one-third of which is by the course of the river and its branches into the Gulf of Mexico, and the other two-thirds by evaporation.

5. Thus we arrive at the development of a fact of the most momentous importance to the planting interests of Louisiana and Mississippi, for it will be readily perceived, that the more exhalation is promoted, the less liable will the lands of these two States be to the periodical inundations of the river. It may be asked, by what process can we expect to promote evaporation, so as to cause such an increase of quantity as to sensibly benefit the planting interests, and that, too, over such a vast extent of surface as is contained in the expansive area

that comprehends the Mississippi valley. The answer is, that the progress has been, and is now, in a rapid state of prosecution, and of that kind which is the best calculated to produce such an effect—namely, the clearing of the lands of their primitive forests, and their consequent exposure to sun and atmosphere, the very best promoters of the evaporating process on so extensive a scale. It will not be difficult to perceive the vast difference there must necessarily be in the quantity of evaporation from a surface of country exposed to the action of sun and winds, and one covered with a dense forest, where neither can penetrate but with difficulty.

The lands of the Mississippi valley are so subject to this increase of exposure, that we may hazard the assertion with safety, that there is not by twenty or twenty-five per cent. as much water now passes down the Mississippi, annually, as there was twenty-five years ago. This conclusion is not arrived at hastily, but by patient observation of the circumstances in connection therewith during all that lengthy period, at whose beginning there were annual inundations of almost all the low or bottom-lands, and for very lengthy periods of submergence of almost all the bottom-lands, from the Bluffs or Highlands on one side of the river bottom to those of the other side, and to such a degree, that but little or no hopes were entertained of the practicability of their redemption by any artificial means, that is, on any scale. But such has been the diminution in the annual quantity of water discharged from the valley, that those lands have been progressively and rapidly redeemed from overflow, until very great portions of them are now in the highest state of cultivation, and with but comparatively slight assistance from art, in the way of embankments, and these such as would not have been at all available against the overwhelming effects of former floods, and the length of time of their continuance; for then there were lengthy and annual inundations, both deep and expansive, of the waters over almost all the bottom-lands. But now the river seldom rises to the same elevation as formerly, and when it does, it is of much shorter duration, and the waters are almost exclusively confined to the channel of the river, in place of being spread over almost all the bottom-lands the whole spring and early part of summer. All the advantages are progressively and rapidly extending themselves, while the causes remain unsuspected or overlooked, but none the less secure. As a further evidence of the altered condition of this river, we may mention the circumstance, that, in former times, the steamboats ascending or descending the river, were detained about half of their time by dense fogs; while now hardly any such obstructions prevail, so that packets succeed in making their trips to an hour, with no fears of such a retardation. Assuming that the diminution of the waters will continue in somewhat the same ratio they have recently done, *the time cannot be very far distant when all apprehension from inundation will have in a great measure passed away.*

We will further remark, as an evidence of change, that the quantity of floating timber or drift-wood passing annually down the river, has diminished in a far greater ratio than that of the water, so that the aggregate quantity cannot now be over fifty per cent. of that which formerly passed down.

5. It must be admitted that the extension of agriculture has con-

siderably diminished the discharge of many springs and creeks, and may have decreased the atmospherical precipitation. Although the loosened ground becomes at present sooner dry than formerly, when covered with grass and other vegetation, and springs and creeks have become perfectly dry which formerly furnished an ample supply of water—yet experience has shown, that the mean annual height of the surface of the large rivers of Europe has remained nearly the same for a period of one hundred years—during which time correct observations have been made. And if a diminution of the waters of the river Mississippi should actually take place, by the extension of agriculture, the time must be very far distant when all apprehension from inundation will have in a great measure passed away.

If the rain should fall on an impenetrable plain it will become evident, by comparison of the annual quantity of water which falls with that of evaporation, that no accumulation would take place, but it would become sometimes entirely dry in the course of the year: but on the surface of the earth we find that a part of the rain is absorbed by the ground, and the other remaining part flows toward the depressions and into the river to the sea. In both cases the evaporation is diminished, because the water which enters the ground is withdrawn from the effects of the air, and the surface of the river which comes in contact with the air is so small that the evaporation is much decreased.

The extension of agriculture, and the erection of embankments, exercise also an essential influence on the elevation of the bed of the river. The water which falls on the loosened and drained ground can carry along into the river a greater quantity of heavy materials, which elevate the bed and the adjacent lowlands which it overflows, and the inclosed low bottoms cease to become higher. The increased quantity of heavy materials which are carried into the river may produce a local elevation of the surface of the river, and demand the erection of embankments, to protect the adjacent low bottoms from overflow. This phenomenon or local elevation of the bottom, will prove that a diminution of the quantity of water discharged by the river may take place and yet the surface of the river become higher.

The bends which form and destroy themselves again, contribute mainly to the constant transformation of the course of the river, and produce, therefore, sometimes an elevation and sometimes a lowering of the surface of the river. The straightening of the course of the river, or destruction of these bends, is perhaps one of the causes that the river, above the Delta, does not rise to the same elevation as formerly. The extension of agriculture affords not only a greater supply of heavy materials to the river, and a quicker supply of water, but renders the flood more sudden and of much shorter duration.

From the above it must be obvious, that the promotion of the speedy discharge of the water in the river, must be considered as the most important object of the regulation of the river.

By the erection of proper works and availing ourselves of the velocity of the current, we will not only succeed in maintaining the present depth of water, or prevent the deposit of heavy materials and the height of the surface of the river, but in many cases may produce a greater lowering or depression of the surface than actually is desirable. But

no person will believe that the time is not far distant, when, by the diminution of the quantity of water in the river Mississippi, all apprehension from inundation will pass away, although the country may become more exposed to the effects of the sun. The fogs arise generally when the water of the river and the moist, low bottom-lands are warmer than the surrounding moist air. The steam which is formed by the high temperature of the water and low bottom, is condensed as soon as it is diffused in the colder moist air; and in the same way the fog may be formed when the moist air is warmer than the water. The observations which have been made can hardly justify us in stating that the climate of the lower Mississippi has altered, or that it has become warmer or colder. The less moist the air, the sooner it will absorb the water and the greater will be the evaporation from a plain of water which comes in contact with it. If the air becomes warmer it will absorb more water, but if it becomes cooler it will eject a part of the water. The latter separates itself, as a visible and moist fog or cloud, from the former entirely transparent air, and as the fine particles unite by degrees to drops, they fall down as rain. Those plains which are covered with trees, and therefore not exposed to the sun, remain cool and moist, and present to the circulating warmer air, only a colder, with water-saturated current of air. In its neighborhood we will therefore observe more frequent rain. Deserts of great extent, which are entirely exposed to the heat of the sun, communicate anew the warmth, which they have received to the surrounding air, and increase thereby its capacity for the reception of the water. The meeting with a cooler saturated current of air produces no more precipitation, and the dryness of the land is even the cause of the scarcity of rain. In Upper Egypt, the rains were formerly very frequent, but since the Arabs have cut down the trees, the quantity of rain has considerably diminished. The clearing of the lands in the valley of the Mississippi of their primitive forests, and their consequent exposure to the sun, may also, according to the above, decrease in some measure the mean annual quantity of rain, or the mean annual quantity of water which the river discharges.

6. We will give you now (proceed the committee) the quantity of solid matter with which the waters of the Mississippi are annually charged, together with its effects in the formation of lands or filling up of depressions. The quantity of sedimentary matter contained in the water to the volume of the river, or in other figures and words, the mean proportional quantity of sediment to the river is as 1 to 528.

6. Professor Lyell states, that the mean amount of sedimentary matter in the waters of the Mississippi river is 1 in 1800 by weight, and 1 in 3000 by volume; and Professor Riddell found by experiments 1 to 1245 by weight, and 1 in 3000 by volume. (Vide De Bow's Commercial Review, vol. II, page 439.)

7. We have already ascertained the quantity of water annually discharged by the Mississippi river to be 14,883,360,636,880 cubic feet, there must then be deposited from that quantity of water 28,188,053,892½ cubic feet of solid matter.

7. The mean annual quantity of water discharged by the river as before stated being 33,732,864,000,000 cubic feet, the annual discharge of solid matter will be $\frac{33,732,864,000}{3000} = 11,244,288,000$ cubic feet.

8. Being in possession of the data by which may be computed, with some approximation to certainty, the effects of the Mississippi deposits in the formation of land, or in filling up the Gulf into which it is emptied, we will avail ourselves of such data and endeavor to present the quantities deducible therefrom. In estimating the Delta of the Mississippi, we have adopted for it the superficies assumed by Dr. Lyell, in his investigation of this subject, and will say with that gentleman, that the Delta of the Mississippi river comprehends all that great alluvial plain which lies below or to the south of what, until recently, was the first branching off or highest arm of the river, called the Atchafalaya. This Delta is computed to contain a superficial area of 13,600 square miles.

In deciding on the depth of this quantity, we will adopt that which was assumed by Professor Riddell on this subject, and say, that it is of the average depth of one-fifth of a mile, or 1,056 feet, inferred from that being the average depth of the Gulf of Mexico from the Balize to the Gulf of Florida.

8. The Delta or the alluvial plain, which lies below the Atchafalaya, is taken at 13,600 square miles, and its mean depth at 1,056 feet.

9. We find by computation, agreeably to the above data, that it would require a quantity not less than 400,378,429,440,000 cubic feet, or 2,720 cubic miles of solid matter, to constitute this Delta, having ascertained the quantity of solid matter annually brought down by the Mississippi river to be 28,188,083,892 cubic feet, which would be equal to one square mile of the depth of 1,056 feet in $381\frac{1}{2}$ days, or one cubic mile in 5 years and 31 days—it therefore follows that it would require a series of $14,203\frac{1}{2}$ years for the river to effect the final formation of the present Delta.

9. The square mile of this Delta will, therefore, contain $5280 \times 5280 \times 1056 = 29,439,590,400$ cubic feet, and it would require $\frac{29,439,590,400}{11,244,288,000} = 2,618$ years to deposit one square mile of the Delta.

The formation of the present Delta would, therefore, have required $13,600 \times 2,618 = 35,605$ years.

Vast quantities of mud have no doubt been carried far beyond the Delta into the Gulf; while on the other hand the coarser matter, which the river carried along at its bottom, was deposited in the Delta. Besides, the bottom-lands of the river Mississippi have not exclusively been formed by the present river Mississippi, judging from the gradation of the deposits, because their formation required stronger currents, and to bring these deposits from the mountains perhaps other forces of nature may have co-operated. From this we may conclude that the present Delta has been deposited by the river in a far less number of years, than we have found by the above calculations, and perhaps within the Mosaic history.

Professor Lyell says, that the time required for the accumulation of matter found in the Delta and valley of the Mississippi, must have been 67,000 years; and another 33,000 years must have been required for bringing down to its present position the great deposit above.

Professor Riddell has calculated that the Delta below Baton Rouge

occupied in its deposition 119,250 years. (De Bow's Commercial Review, vol. II.)

Dr. Dickeson calculates the time required for the formation of the present Delta 14,204 years—taking the sedimentary matter suspended in the water as 1 in 528 by volume; but taking it more correctly at 1 in 3000 by volume, we obtain 80,703 years.

Mobile, May 1849.

ALBERT STEIN.

RECAPITULATION.

	Inches.	Inches.
1.—The mean annual quantity of rain which falls in the Mississippi valley,	52	36
2.—The superficial area of the Delta,..	Square miles. 13,600	Square miles. 13,600
3.—The superficial area of the Mississippi valley,	Square miles. 1,400,000	Square miles. 1,210,000
4.—The mean annual quantity of water, which falls in the valley,	Cubic feet. 169,128,960,000,000	Cubic feet. 101,198,592,000,000
5.—The quantity of water, discharged by the river, is of that which falls in the valley,	1-12	$\frac{1}{4}$
6.—The mean annual quantity of water discharged by the river,	Cubic feet. 14,883,360,636,880	Cubic feet. 33,732,864,000,000
7.—The sedimentary matter suspended in the waters of the river,	1 in 528	1 in 3,000
8.—The mean annual quantity of solid matter carried along by the river,	Cubic feet. 28,188,183,024	Cubic feet. 11,244,288,000
9.—The depth of the alluvial formation,	Feet. 1,056	Feet. 1,056
10.—The contents of one square mile, the depth being 1,056,	Cubic feet. 29,439,590,400	Cubic feet. 29,439,590,400
11.—The time required to deposit one square mile,	Years. 1,044	Years. 2,618
12.—The number of years required to form the present Delta,	Years. 14,204	Years. 35,605

The sediment of the water is only 1 in 1800 by weight, or 1 in 3000 by volume. The time required for the accumulation of matter found in the Delta 67,000 years.—*Professor Lyell.*

The sediment of the water is 1 in 1245 by weight.—*Dr. Drake.*

The amount of sedimentary matter is 1 in 1245 by weight, and 1 in 3000 by volume.—*Professor Riddell.* (Vide De Bow's Commercial Review, vol. II, page 439 and 440.)

ART. II.—MANUFACTURE OF SUGAR.

A DISSERTATION UPON THE EVAPORATION OF SACCHARINE LIQUIDS.*

THE question, what is the best method of evaporating saccharine liquors, is not yet solved. Upon this subject we possess scientific truths, and the results of manufacturing industry. And it is now requisite to connect the principles with the results of experience, so as to combine them with the question of economy, which governs all industrial operations.

The following extracts, relative to the action of heat upon sugar, are from the chemistry of M. Dumas.

Air produces no alteration upon sugar during evaporation.

Water, maintained in ebullition during fifteen or twenty hours, mortifies the sugar which it holds in solution; it is converted into glucose or uncrystalizable sugar.

In heating sugar to 180° , it enters into fusion; in this state it is not changed; it forms a viscous, colorless liquid; but as soon as it is raised above that temperature, it turns brown and loses water at the expense of its composition, which is then materially modified. Abandoned in this condition to moist air, it absorbs more water than it has lost, and becomes deliquescent; treated with alkalies it is strongly colored under their influence.

If it is brought to the temperature of 210° or 220° , and maintained at that point, without being permitted to go beyond, the sugar is seen to swell, and a lively and almost spontaneous reaction takes place among its elements; the sugar then has a brown tinge which gradually becomes deeper. This product is perfectly soluble in water, and the solution, which presents a rich sepia tint, has no longer the sweet taste of sugar. It is quite as insipid as gum arabic itself. Under the influence of a fermenting substance it exhibits no sign of fermentation. This substance, which is analogous to the caramel of commerce, M. Peligot has designated by the name of caramel or caramelic acid.

At 211° or 220° sugar is converted into caramel by losing three atoms of water; at a higher temperature, it produces inflammable gasses, pyrogenous oils and acetic acid, and it leaves a residue of carbon equal to one-fourth of its weight.

M. Biot, with the aid of his instrument of polarization, observed that a solution of crystalizable sugar, heated only in a water bath, is modified, from instant to instant, in such a manner that, at the end of about twenty-five hours, its nature is entirely changed, and the crystalizable sugar becomes uncrystalizable. He has observed also, that this modification of sugar is as much more rapid, as the temperature at which the

* By evaporation of saccharine liquids, we understand here the extraction, either partial or total, by means of evaporation, of the water which holds the sugar in solution.

All the temperatures of which we shall have to speak, will be expressed in degrees of the centigrade thermometer, unless signified to the contrary.

This paper was translated from the French of E. Degrand, Civil Engineer, Paris, 1845, by Woods Baker, Esq., for Professor McCulloh of Philadelphia. We are indebted to Prof. McC. for the manuscripts, which must have great interest with our sugar planters.

solution is maintained is more elevated; that acids promptly transform crystalizable into uncrystalizable sugar; and that this change takes place with very great rapidity, when to the action of an acid that of heat is added.

These scientific data throw much light upon the question under consideration. Let us now examine whether the facts obtained in manufactories confirm them.

An exclusive privilege was granted, on the 7th May, 1780, for fifteen years, to the brothers Boucherie, sugar refiners of Bordeaux, for the use of their processes of refining. One of these processes consisted in evaporating their clarified syrup in three hours, at the temperature of 85°R^* , in order, they stated, *to avoid the decomposition, effected by the fire, of a large portion of the sugar to be refined.* Having then observed, by long practice, that evaporation in forty or forty-five minutes was no injury to the crude sugar purified by their process, the brothers Boucherie substituted this evaporation, which they called *rapid*, for the evaporation in three hours, although the latter was accomplished at a lower temperature; and they introduced this substitution into their patent of the 29th October, 1791.

This privilege, and this patent, showed that refiners had observed, during many years,

1st, That in preparing the clarified syrup, fire decomposes a portion of the sugar it contains.

2d, That the loss of crystalizable sugar, due to this decomposition, is caused, not only by the temperature to which the syrup is brought in order to evaporate it, but also by the combination of this temperature with the time during which it acts.

About the year 1800, Achard, of Berlin, attempted, in evaporating the juice of beets by exposure to the air, the plan of heating by steam at low pressure, which would not raise the temperature of the juice beyond 70° . From this resulted an evaporation which lasted whole hours, and which rendered uncrystalizable a good portion of the sugar contained in the juice.

In 1791, the refiners treated the syrup in vessels fixed firmly over their furnaces. A part of the sugar in these vessels became caramelized whenever they were emptied; for the syrup, which remained in a thin layer, passed to a temperature exceeding 215° .

In order to prevent this wastage, it became necessary to remove the kettle from the direct action of the furnace, and to cover immediately the thin layer of syrup with a fresh charge. From this originated the bascule pan, due to L. Chr. T. Guillon, sugar refiner of Orleans.†

The general adoption of bascule pans, prior to 1810, shows that refiners knew already, that, at the temperature of 215° , sugar passes into the state of caramel.

* This temperature corresponds to 234° Fahrenheit.

† This same Guillon, under the firm of Benoit, Piniau & Guillon, demanded, on the 27th August, 1804, a patent for fifteen years, for different processes of sugar refining, especially for purifying and decoloring by means of any kind of carbon except that made of turf, and for the revivification of the charcoal. This patent was delivered on the 21st May, 1805.

I have thought it well to mention this fact, because it is either unknown or forgotten.

There were then but a small number of manufactures of beet sugar who struggled with the difficulties of a growing industry. They studied simultaneously the washing of the root, the rasping, the expression of the juice, its defecation, filtration, evaporation and crystallization, and yet were not able to assign to each of these operations its influence upon the result in sugar which they obtained. At first they made use of kettles subjected to the direct action of the fire. Soon after, the example of the refiners caused them to adopt the bascule pans. From this period different kinds of pans were proposed and tried: some heated by steam, others by fire directly—some by successive charges, others continuously, and all freely exposed to the air.

While these facts were manifested in France, others were produced in England, having likewise for their object the reduction of the temperature in the evaporation of saccharine liquids. Ph. Taylor, T. Smith, W. Fawcett, Beale and Porter, concentrated syrups in apparatus, all dissimilar to each other, but all submitted to atmospheric pressure, and employing vapor as the vehicle of heat; Daniel Wilson heated syrup by means of the circulation of boiling oil; Cleland heated it by the circulation of hot water; John Davis tried the Torricellian tube and renounced it for agitators with vanes; Cleland employed, as a means of heating, a metallic worm filled with steam, turning at the surface of the syrup; Kneller, Knight, Hague and Crasley, heated by introducing a blast of hot air.

The most fortunate and the most important of the English innovations, is that of the apparatus for evaporating saccharine solutions in a vessel protected from atmospheric pressure. Several English writers attribute the first idea of it to Davy.* However this may be, Ed. Ch. Howard took out a patent for this invention, on the 20th November, 1813.† In his apparatus, the syrup heated by steam at the temperature of 104° to 107° cent., is concentrated in a close vessel, under a pressure of 0.05 to 0.06 of an atmosphere, and the vapor of the syrup is liquified

* I think that France might claim this honor for Ph. le Bon, engineer of Paris, to whom was delivered, on the 11th September, 1796, a patent for fifteen years, for distilling by means of a vacuum and cold, a patent, a specification of which may be found in the first volume of expired patents, page 361, et seq.

After having exposed the means by which nature produces immense distillations with promptness, Le Bon indicates how these means may be combined to form a very large number of arrangements for the use of man. Among these various kinds of apparatus, there is one in which a vacuum is formed and sustained by a tube of Torricelli; another in which the vacuum is formed and sustained by a pump, destined to pump the gasses which the liquids submitted to distillation disengage, the condensed liquor itself, and a part of the vapor which the pressure of the pump may convert into a fluid. He applies, besides, heat to the fluid to be distilled, or he turns to profit ice, and the rigor of winter, as substitutes for fuel. Distillation, he adds, is thus made at extremely low temperatures.

He then indicates different applications, particularly for the formation of salts, and in general to separate and collect any compounds, whatever may be their constituent parts, fixed or volatile.

† There are two patents of Howard, the first of the 31st of October, 1812, the second, of the 20th November, 1813. The translation of the latter may be found almost entire in the *Industriel* for December, 1828, p. 329 to 423, plates 19 and 20. Howard describes the clarification of brown sugar, the melting of the same sugar, and the base products of refining. He mentions several ingredients for clarification. He says that the strike may be withdrawn when imperfect, and the crystals made to form in it afterward. And he speaks of evaporation in vacuo to the consistence of solidity, etc.

and cooled, by a continued injection of cold water, in a condenser, similar to that of Watt's steam engine. Two conjoined pumps remove: the tepid water resulting from this condensation; the air, which the cold water holds in solution under the pressure of the atmosphere, and which becomes free in passing into a medium whose tension is nineteen times less; the air which may have been introduced into the apparatus through the moveable and stationary joints; and the undensified gasses, if the syrup disengages any. Depending upon the principle, that as much less crystalizable sugar is lost as the temperature for heating and evaporation is reduced, Howard fixed this temperature as low as possible—conforming to the usual mode of working among refiners, that of successive charges. Such was the superiority of the practical results obtained by this apparatus, that the English refiners adopted it, notwithstanding the patent right (which required a duty of 2*l*. 6*s*. per metrical quintal of brown sugar used); notwithstanding also its high price, the large quantity of cold water it required, and its great consumption of fuel. So true is it that it is more important for the manufacturer to obtain a greater result in sugar than it is to reduce the first cost and even the daily expense.

In making the Howard apparatus, different French constructors have supposed that they might release themselves from the conditions of low temperature, to which it is subjected in England. Instead of heating with steam at 104° or 107°, they have heated at 150° on an average; and instead of reducing the pressure of the steam upon the syrup boiling in the close pan, to five or six-hundredths of an atmosphere, they have reduced it only to two-fifteenths of an atmosphere. Such at least are the constructions of MM. Derosne and Cail, which they have termed perfect apparatus. By means of this inversion of the normal conditions of the invention of Howard, there was evaporated in an apparatus of small dimensions, in a given time, as much syrup as was evaporated with a much larger apparatus of English construction. But the injury of more crystalizable sugar was also a result. Starting in this wrong course, MM. Derosne and Cail constructed the apparatus of Howard so as to bring the syrup to a concentrated condition; and thus have produced a sugar so modified, that it passes into a pastry state upon contact with the air. Improvements of this kind are retrogradations of a marked character.

The work executed with Howard's apparatus shows that very beautiful sugar may be obtained, even when the concentrations are conducted by successive charges, provided the evaporation is carried on at low temperatures for heating and boiling; it proves, also, that with the same apparatus, no good results are produced when these conditions are misunderstood.

The apparatus of Dégrand, otherwise termed the double-acting-vacuum apparatus (*l'appareil à vide à double effet*), is distinguished from that of Howard in this, that instead of condensing the vapor given off by the closed pan, by an injection of cold water, it is condensed by the vaporization of a mass of water or of saccharine juice, which is made to flow over the exterior surface of pipes into which the steam to be condensed is conveyed; this vaporization is hastened by a rapid current

of air flowing upon the water or upon the saccharine juice which flows upon those pipes.

The refrigerating power of the Dégrand apparatus resides in the hygrometric property of the air, which, by its contact with the liquid flowing slowly upon the pipes of the condenser and keeping them wet, causes evaporation, at the expense of the latent heat in the steam which circulates within the pipes. As air is everywhere, there is no locality where the apparatus of Dégrand may not be established. We can, at will, augment both the volume and the rapidity of the current of air for the use of the apparatus, and, by these means, reduce to the lowest possible degree the temperature of ebullition of the syrup. And finally, as the air charged with humidity is discharged into the atmosphere, the regular working of the apparatus is entirely at our disposal.

The apparatus of Howard has not this advantage. Its refrigerating power resides in the low temperature and the volume of water injected. This power, which is nothing in situations without water, and feeble in those where it is found in insufficient quantities, operates in the fullness of its energy only where cold water abounds, provided, at the same time, it may be readily discharged in the tepid condition; and this energy is also limited by the power of the pneumatic arrangement.

There are but a small number of sugar refineries which have at their disposal the quantity of water necessary for the use of the Howard apparatus; besides, since this apparatus, as seen in English refineries, is presented under the most favorable aspect, because it is there executed in its normal condition by English constructors, governed by the precepts which the inventor bequeathed to them, it is not surprising that refiners, others than the French, should buy in England the Howard apparatus, when they could not establish them in their own country exactly conformed to the English type; and as for the French refineries, there are but few of them yet which estimate at its just value the influence which a great lowering of temperature exercises upon the yield of brown sugar. Hence, the greatest number receive as good, the apparatus which is furnished them.*

Now, comparing the Howard and the Dégrand apparatus with each other, considered in their application to the manufacture of sugar, either domestic or colonial, we say that the first is single-acting and the second double-acting (*le premier est à simple effet, et le second à double effet*). This requires explanation.

In the application under consideration, the Howard apparatus, which, by a cold injection, condenses the vapor extracted from the syrup, renders lukewarm a considerable mass of water; and, as there is no use for this tepid water, it is rejected. Consequently, the steam which heats the syrup produces only one useful effect.

In the Dégrand apparatus, the heating steam produces two useful

* It is not within my knowledge that any one of our refiners, in a bargain with the constructors of the apparatus of Howard, has stipulated what should be the temperature of the heated steam, proved by a thermometer, inserted at the point where it enters the heating worm (*le serpent in de chauffe*), and what should be the temperature of ebullition of the syrup (proved by a thermometer immersed in that liquid), at which the apparatus sold to them should work, in order to produce the results which the constructor may have promised.

effects: the first, in evaporating the syrup in the closed vessel; the second, in evaporating saccharine juice upon its condenser. It is to this last evaporation that the condensation of the steam, which is generated in the closed vessel, is due.

The double effect of the Dégrand apparatus, and the facility of establishing it in localities deficient in water, have caused it to be adopted by a large number of manufacturers, and have extended the use of it to the colonies. Unfortunately, MM. Derosne and Cail have seen fit to suppress the current of air which is the essential organ of its refrigerating power. In consequence of this mutilation of the invention, all the apparatus which they have constructed, works, only at temperatures too elevated and too long continued, and thus injures a portion of the sugar in evaporation. They attempt to remedy the evil in vain, by rendering the invention more complicated, and even by partially perverting it by interposing a water condenser between the serpentine pipe and the air pump.

Such arrangements can end, and in fact have ended, only in raising the price of the apparatus beyond measure, and in diminishing its useful effect; so that the manufacturers of sugar do not yet know how the apparatus of Dégrand works in its normal conditions.*

The present state of the manufacture of sugar in France, so far as the evaporation of saccharine liquids is concerned, is as follows:

The arrangements acting continuously upon thin layers of syrup, heated by high-pressure steam and exposed freely to the air, have been abandoned, because among the numerous varieties which have been tried, none have fulfilled the condition of good working. There are some manufacturers who evaporate entirely in bascule pans, exposed to the direct action of the fire and to the air, occupying two hours and a quarter to bring the juice of the sugar beet to 18° or 20° Baumé, and three-quarters of an hour to bring this syrup to the striking point. Some evaporate the juice in these pans to 18° or 20° Baumé, and then employ open pans, heated by steam, to reduce the syrup to its proper density. Others, who evaporate entirely by steam, at 150°, in open pans, take thirty to thirty-five minutes for evaporation to 18° or 20° Baumé, and fifteen minutes for concentration. All these manufacturers produce sugar of good quality. Others again, evaporating entirely by the Dégrand apparatus, such as MM. Derosne and Cail construct, do not produce a sugar of irreproachable quality, but at least obtain it with economy in fuel. Still, others, by making use of the Howard apparatus,

* Extract from a letter written the 8th March last, by a manufacturer, to whom MM. Derosne and Cail sold a double-acting-vacuum apparatus:

"The pressure of the steam indicated by a manometer is in mean terms $4\frac{1}{2}$ atmospheres.

"Our spheroidal pan has neither thermometer nor manometer, but there is a barometer near the bottom of the condenser, which, when juice is in the apparatus, indicates about one inch of vacuum, and when there are syrups, from eight to ten inches."

A vacuum of one inch is what MM. Derosne and Cail term a depression of an inch. Consequently, the pressure in the pan at the bottom of the condenser is twenty-seven inches, which corresponds to twenty-seven twenty-eighths of an atmosphere. The depression of eight to ten inches corresponds to a pressure of nineteen twenty-eighths of an atmosphere. These are certainly not the normal conditions of the apparatus of Dégrand.

obtain a good sugar, while there are some, who, with the same apparatus, produce sugar in a pasty condition. And, finally, good results are obtained by evaporating with steam at 150° in open pans, to 18° or 20° Baumé, and then employing a vacuum apparatus, of either double or single effect, to bring the syrup to the striking point and to work molasses.

From the whole of these practical results it seems, that if only the quality of the sugar produced is considered, there is but little reason to prefer one kind of pan to another; but this view of the subject would be incomplete, for it is also necessary to take into consideration the coloration of the sugar more or less decided, as well as the quantities of sugar respectively produced by a given weight of beet juice, supposing all the circumstances of the manufacture similar, except the pans, or the evaporating apparatus. As for the coloration, the sugar coming from pans exposed directly to the fire, is a little more colored than that which is obtained by heating with steam at 150° in open pans; and this last does not attain to the whiteness of sugar evaporated in a vacuum apparatus. On the other hand, the quantity of sugar produced is as much greater as the coloration is less decided.*

So far, we have omitted the condition of economy. We will now submit to this condition the different classes of pans of which we have spoken in relation to their production in sugar. The kettle permanently fixed over its furnace, exposed directly to the fire and open to the air, is the most simple and the cheapest of all which have been used in the sugar manufacture. There is reason, however, to prefer the bascule pan, similarly exposed to the fire and air, although somewhat complicated and a little more costly; because the value of the sugar which escapes caramelization compensates, in a few months work, for the excess in first cost. It cannot be said, however, that the bascule pan produces no caramel at all, but it produces less than the fixed kettle.

The pans evaporating with exposure to the air, and heated by high-pressure steam, are a little more expensive than bascule pans exposed directly to the fire; but they color the sugar less and do not injure so much of it. In order to determine which of these vessels ought to be preferred, it is necessary to calculate the respective expenses which each establishment requires to evaporate, in a given time, the same quantity of water. It is evident that the high pressure steam pan is more expensive than the bascule pan, because it is more complicated, and that it requires a steam boiler of which the bascule has no need, and a furnace more costly than that of the bascule. This excess in outlay must be considered. Besides, the steam pan requiring a more active superintendence, and a better fireman than the bascule, imposes a daily expense a little greater, during all the time of the operation of either apparatus. This expense has to be counted. Reckoning, then, the increased value, and the excess of weight, of the sugar which the steam pan furnishes during all the time assigned for its operation, a comparative calculation will be established, with the accumulation of interest, crop after crop, as long as the pans last, by placing on one side the excess of outlay and

* All these facts, which at the first glance seem to conflict, are readily explained by the combination of scientific data furnished by M. Dumas and M. Biot.

the excess of expense in keeping up the repairs of the steam pan, and, on the other side, the increased value and the excess in weight of sugar due to this pan. And if the result of this comparison gives evidence, as is probable, that the high-pressure steam pan is more profitable to the manufacturer than the bascule pan, he should prefer the first through *economy*, for economy does not consist in saving a useful outlay, or in substituting for it a smaller outlay, but less profitable; it consists, on the contrary, in giving to the capital to be disposed of, the most profitable expenditure.

The form of calculation just indicated, may be applied to all the comparisons which we wish to make between any two kinds of evaporating apparatus. In order to develop it more fully, we will use figures in comparing, in an economical point of view, the apparatus of Howard and that of Dégrand with each other, in their application to the manufacture of beet sugar, which operating daily upon 290 hectolitres of juice, should vaporize 27,000 litres of water in twenty-four hours, and we will suppose that both of these machines are executed in their normal conditions.

Since the apparatus of Dégrand evaporates upon its condenser about as much water as in its closed pan, it requires a closed pan of an evaporating power of 14,500 litres per day, while that of Howard requires one of 27,000 litres to produce the same effect. Since the Dégrand apparatus has only 14,500 litres of water to evaporate in its closed pan, there suffices for its heating 15,000 kilogrammes of steam, while the apparatus of Howard demands 28,000. Consequently, the steam boilers required by the latter, cost almost twice as much as those attached to the Dégrand apparatus. The outlay for the construction of the respective furnaces, and the respective expense in fuel for the required evaporation of 27,000 litres of water per day, are in the same ratio:

When the tension of the steam in the closed pan of a vacuum apparatus is measured by a barometrical column of 89 millimetres, the temperature of this steam is 50° ; and, according to the original observations of Howard, reduced to French measure, the corresponding temperature of the syrup is 62° . In order to work, under these conditions with an apparatus of Howard, 290 hectolitres of juice per day, by condensing with water at 10° , and discharging this water at 30° , 7,700 hectolitres of water should be introduced into the condenser in twenty-four hours. But we will calculate upon 9,500 hectolitres, because the syrup which is nearly concentrated requires a greater quantity of cold water than the condensed juice. This mass of water holds in solution 380 hectolitres of air at the temperature of 10° under atmospheric pressure. In passing to the temperature 30° , under a tension of 89 millimetres, this air becomes free and takes a volume of 3,475 hectolitres. Besides, the liquor submitted to vaporization may give off some uncondensable gases, and probably there is also some air introduced into the pan through some of its moving joints. For this reason it is necessary to furnish the Howard apparatus with two large double acting pumps, with pistons of the diameter of 50 centimeters, for the purpose of removing the tepid water, the air, and the uncondensed gases. These two pumps involve the necessity of a four or five horse power engine, consuming ordinarily 5.4 hectolitres of coal per working-day.

With the Dégrand apparatus it is necessary to remove, in twenty-four hours, water at 30°, resulting from the condensation of 14,500 kil. of steam, forming a volume of 146 hectolitres, besides uncondensed gasses which the evaporating liquor may have disengaged, and some air which may have found its way through the joints. Consequently, the Dégrand apparatus has no need, like that of Howard, of a powerful pneumatic arrangement. The engine applied to the Dégrand apparatus, is of a power much less than that required by the apparatus of Howard. Hence, also, the expense in fuel, for the support of the pumps of the Dégrand apparatus, is much less than that demanded by the pumps of Howard.

In sugar factories, where cold water may be had abundantly by boring wells, it is necessary to add to the cost of the Howard apparatus—first, the expense of boring, and the cost of the tube which plunges into the water. Second, the cost of the engine for raising this water into a reservoir, at a mean height of 24 meters. The power of this engine, which will raise from 9 to 10,000 hectolitres of water in twenty-four hours, should be about four horses; consequently, it will consume 4.8 hectolitres of coal per day. Third, the cost of a reservoir, and that of the pipes which establish its communications with the engine and condenser. Fourth, the construction of channels or trenches for leading off the waste-water.

In sugar factories where the water for condensation cannot be procured (and they are the greatest number), the Howard apparatus cannot possibly be used. It would be vain to attempt to cool the tepid water at small expense, either by causing it to circulate in open trenches, or in any other manner; the volume to be cooled daily, when it is necessary to lower its temperature to 15°, is enormous. Consequently, the establishment of means of refrigeration would cost too much. In 1835, MM. Roth and Bayret, attempted to cool the water injected into their condenser artificially; and, although they had great interest in succeeding, and did not lack money—while the means they resorted to were well conceived and executed—they were obliged to give up the experiment, after many fruitless attempts.

Having now fixed the basis of the comparative calculation which we wished to make, between the apparatus of Dégand and that of Howard, as to their respective economy, we will complete the calculation:

An apparatus of Howard, in its normal condition, to work 290 hectolitres per day, costs.....	12,500 fr.
Its engine, air pumps and pipes,	6,500
Add to this the other expenses which are incurred by the Howard apparatus, in sugar factories, which have no water-course at their disposal, viz :	
Boilers requiring 37 000 kil. of steam per day, or 1,125 kil. per hour, estimated at.....	7,500 fr.
Their furnace and chimney, estimated at.....	1,500
Boring one or more wells, Reservoir, Engine for raising water, Trenches for waste-water, } estimated at.....	7,000
	16,000
Total.....	35,000 fr.

This is, approximatively, the first outlay which is required by an apparatus of Howard, in its normal condition.

We have shown, page 116, that the one which MM. Derosne and Cail offer to purchasers, does not satisfy these conditions; the price, however, is the same.

Suppose this apparatus lasts fifteen years. At the end of that period, the outlay of 35,000f., bearing an interest of 5 per cent. accumulating year after year, becomes 72,760f.

The accumulation of interest is rigorously required in the present calculation, for the simple reason that capital never lies unproductive in the safes or pocketbooks of merchants, and that interest becomes capital in their hands from year to year, and, in certain operations, from month to month. In fact there is no difference between interest acquired and capital; neither is there any between capital expended and interest lost.

In working with the Howard apparatus, of which we have just estimated the first cost, the expense it incurs for each crop is as follows:

The daily evaporation of 27,000 kil. of water, by the aid of the usual generators, which produces 5.5 kil. of steam per kil. of coal, consumes of coal 4,909 kil., or	61.3 hect.
The cold water pump uses	4.8
And the air pumps use	5.4

Total, 71.5

Of which the cost, at a mean price of 1 f. 75c., per hectolitre, delivered at the factory, amounts to 125f. Reckoning the crop to last for one hundred and fourteen days of actual work, the cost of the coal is.	14,250 fr.
The firemen's wages, about	450
The maintenance and repairs of all the details of the apparatus, its boilers and their furnace, amounts annually to	1,000

Total, 15,700 fr.

This expense, which is incurred at each crop, during fifteen successive crops, represents at the end of the fifteenth, adding the accumulated 5 per cent. interest, a capital of	338,850 fr.
At the end of the fifteenth crop, the first cost represents a capital of. .	72,760

Total, 411,610 fr.

In the hypothesis which serves for the basis of the present calculation, the apparatus is past use at the end of fifteen years. It is then sold as old machinery, for, say	3,000 fr.
--	-----------

Consequently the whole cost is, 408,610 fr.

For evaporating and concentrating, day by day, with an apparatus of Howard, 290 hectolitres of juice and molasses, during fifteen campaigns of one hundred and fourteen days of actual work, which amounts, upon the whole, to working upon a volume of 495,900 hectolitres.

This juice may be more or less aqueous, depending upon the soil, the seasons, and the proportion of water added in the raspague. If we suppose, that on an average, 9 kil. of sugar per hectolitre of juice has been produced, the weight of sugar obtained in fifteen crops has been 44,631 metrical quintals. Dividing among this number of quintals, the sum 408,610f., paying attention to the compound interest, in the ratio of

five per cent. per annum, it is found that the expenses attendant upon evaporation amount to about 6f., 36c., per 100 kil. of sugar of each crop, proportionally to the production.

The expenses attendant upon evaporation, with the *vicious* apparatus which MM. Derosne and Cail deliver to their purchasers, by modifying the Howard apparatus with their improvements, necessarily amount to a tax much greater than 6f., 36c., per 100 kil. of sugar, because this apparatus not fulfilling the normal conditions of reducing the temperatures of heating and ebullition, gives a smaller yield in sugar.

We cause the word *vicious* to be printed in italics, in order to indicate that it is not written carelessly. The following is proof of it: we extract it from a memoir published by the constructors themselves—a memoir cited in the margin of the seventh part of the fourteenth volume of the *Publication Industrielle*, page 295, by M. Armengand, Sr., which has appeared within the last twenty days. "We have observed," say MM. Derosne and Cail, in their memoir, "that in the evaporation of juice to 25°, the degree of vacuum was sufficient when the mercury maintained itself in the barometer at a depression of 40 to 45 centimeters; in the work of the second operation, that from 25° to the proper state of consistence, the vacuum should be maintained at between 48 and 60 centimeters of depression."

The pressure of the atmosphere being measured by a barometric column of 76 centimeters, it must be understood here, by a depression of 40 to 45 centimeters, that the saccharine liquid is submitted to a pressure of 36 to 31 centimeters in the first evaporation, and to a pressure of 28 to 16 centimeters in the second. From the natural relation which exists between the elastic force of saturated steam and its temperature, the pressures of 36 to 31 centimeters correspond to temperatures of 81° to 77°, and the pressures of 28 to 16 centimeters to temperatures of 75° to 62°.

On the contrary, the observations of Howard, show that there is a difference of 12° between the temperature of the boiling syrup and that of the steam which this syrup emits in a partial vacuum.* Consequently, the precipitate assertion of MM. Derosne and Cail means, that they have observed that in the evaporation of juice, the temperature of saccharine liquids was sufficiently depressed when it did not surpass 81+12, that is to say 93°; and that in the subsequent labor, in passing from evaporation to concentration, the temperature of the saccharine

* On page 305 of the *Publication Industrielle*, previously cited, MM. Derosne and Cail give a small table of ratios between the temperature of steam and its tension; and after this table they say that the temperature of steam is the same as that of the liquid from which it arises. This erroneous assertion causes manufacturers and sugar refiners to think it unnecessary to introduce a thermometer into the close pan of the vacuum apparatus showing the temperature of the syrup, and a manometer in immediate connection with the pressure of the steam in the dome of the boiler.

The possession of the most elementary knowledge of physics suffices to show, that substances in solution always elevate the boiling point of water; as, for example, a saturated solution of sub-carbonate of potassa boils at 140°, while the steam freed by this ebullition is at 100°. Besides, it suffices to have taken the temperature of a boiling syrup at the point of concentration, and that of the steam which escapes from it, to know that the syrup boils at 112° or 114°, in giving off steam at 100°.

liquid was sufficiently depressed, when it did not surpass $75+12$, that is to say, 87° .

However, in the London refineries, which produce sugar perfectly pure, and of the most beautiful crystalization, for a maximum yield of brown sugar, the pressure upon the syrup is at most 9 centimeters; and this pressure falls to 4 toward the end of the condensation. Besides, in the Howard apparatus, constructed by M. Louvrier & Son, the pressure upon the syrup falls to 9,5 centim.; as it appears by a note he furnishes to the *Publication Industrielle*, quoted at the bottom of page 290 of the number before referred to. It is then obvious, that the degree of vacuum which MM. Derosne and Cail declare that they have observed to be sufficient, is far from the truth; and their assertion, which depends neither upon experiments nor theoretical deductions, has no other effect than that of leading into error persons who may admit it as true.

And it is not only by elevating the temperature of the ebullition of syrup to a very high degree, that they transgress the natural laws which govern the evaporation of saccharine liquids; but also in elevating beyond measure the temperature of the steam which heats the syrup; they carry this steam to 150° , while in the English refineries referred to, it carried only to 104° or 107° .

Thus, when MM. Derosne and Cail say that they have improved the Howard apparatus, it must be understood that, in the apparatus with injected water which they construct, the syrup in ebullition is at 93° or 87° , when it should not exceed 63° , and that it is heated by 150° , when the steam should not exceed 104° or 107° . Hence, there results necessarily, that the purchasers of the Howard apparatus, such as MM. Derosne and Cail deliver them, realize neither the beauty, nor the quality, nor the quantity of sugar, which the sugar refiners of London obtain with the Howard apparatus which they buy in London.

In order to induce manufacturers and refiners to buy the apparatus which he constructs, M. Cail says to them: "That the water-injecting apparatus is the monarch of its kind; that it is an established affair." There is in this assertion an artifice of language which results from the confusion which M. Cail established between the Howard apparatus for the use of English refineries, and the same apparatus said to be perfected by himself. At first glance, these two machines have some resemblance, because they are both vacuum apparatus, with fixtures for the injection of water, but they differ essentially in point of manufacturing effect. Consequently, what English refiners may say in favor of the apparatus, their use is in nowise applicable to the awkward imitation of that of Derosne and Cail.

There is besides a concealment in their assertion, respecting the application of the apparatus, with the water-injection, to the manufacture of sugar; they deceive manufacturers in the first outlay in the working of this apparatus, and the influence of its consumption of fuel. We will demonstrate this fact, not by means of words of several meanings, but with figures, the only unanswerable argument in questions of this nature.

(To be concluded in our next.)

ART. III.—USURY LAWS AND THE VALUE OF MONEY.

HE who traces the history of the laws, on the subject of *interest*, or the profits of capital unconnected with labor, will not rise from the study disposed to exclaim, with Hamlet, "What a piece of work is man! how noble in reason! how infinite in faculties! in apprehension, how like a God!" but will rather be disposed to exclaim, with the cynical philosopher of Ferney, "Pedagogue in phrases! furred reasoner! thou inquirest after the limits of the human mind: they are at the end of thy nose." Lawyers know—for all lawyers have read Blackstone—that "in former times, many good and learned men very much perplexed themselves, and other people, by raising doubts in *foro conscientia*, about the legality of exacting a reward for the loan of money." They held, that any *interest*, high or low, was alike indefensibly usurious; and proceeded to justify their opinion by those stately absurdities of ratiocination, that were "part and parcel" of their age.

They insisted, "*imprimis*," that the law of Moses prohibited the taking of interest among the Jews, without adverting to the fact, that it was confined to the trade of Jew with Jew, and that, in their intercourse with strangers, they were expressly permitted to loan on *usury*, which, in past times, meant nothing more than *interest*, or a remuneration for the use of money. "Unto a *stranger*," Moses says, "thou mayest lend upon usury, but unto thy brother thou shalt not lend upon usury: that the Lord thy God may bless thee in all that thou settest thy hand to, in the land whither thou goest to possess it." While, therefore, the Christian Antonios (generous souls, though foolish) were reaping "golden opinions, from all sorts of people," by "lending money, gratis," the more sensible Shylocks of the tribe of Isreal, reaped more *exchangeable profits*, by a better understanding of the words of their law-giver. It is a singular circumstance, that Christians should have overlooked the fact, that the Jews, themselves, put a different construction upon the law, and adopted a different *practice* in regard to the loan of money. But it is still more surprising, that these learned Christians should have overlooked the parable of the *talents*, in the twenty-fifth chapter of Matthew, in which the servant who did not put his *talent* out, "to the exchangers," in order to "receive it" back "with usury," was punished, by having it taken from him and given to the one who had made *cent. per cent.*, by the loan of his.

These learned reasoners upon the propriety of taking interest, likewise hooked up, out of the crude mass of ancient learning, a dictum of Aristotle, "that money is naturally barren, and to make it breed money is preposterous and a perversion of the end of its institution, which was only to serve the purposes of exchange, and not of profit;" and, in consequence of this train of logic, Mr. Blackstone tells us, that "the school divines branded the practice of taking *interest*, as being contrary to divine law, both natural and revealed; and the common law proscribed the taking any—the least—interest for the loan of money as a mortal sin." Modern "usury laws," are but an *offspring* of these old opinions (idiot child of idiot mother); for, although the practical maxim of our day, that "money makes money," is the reverse of Aristotle's, our

legislators, still regarding that old prejudice, which hangs like a cobweb around the brains of men, have but, *in part*, eradicated the absurdities of the past.

Our laws, it is true, allow us to take *some* interest, but deny us the privilege of taking the full, natural, market value of the use of money. They make a sort of Procrustes bed for the profit of capital, and cut it off when it goes beyond the limit, and in a measure tend to *stretch it out*, when it would naturally fall below. In the sale, or hire, of every other commodity, we are permitted to exact its full value, and would be thought very foolish not to do so. What reason, then, exists in the case of *loans*, for a departure from this general law of domestic free trade, in permitting every article to command its natural, market price—to rise and fall, according to the supply and the demand? There must be some reason for it.

Let us, then, inquire what were the objects which the framers of modern usury laws had in view; what are the actual consequences of those laws; what would result from their repeal; and whether they are consonant with justice and the general freedom of our institutions.

I can recall but two reasons for the passage of usury laws: first, the establishment of a uniform measure for the value of money for a given time; secondly, the protection of the borrower against the oppression of the lender.

In regard to the first object, it may be asked, how is it possible to establish a fixed value for that which is constantly changing? How vain the attempt, to render stable that which is as unstable as water! Money, like every other commodity, has its fluctuations in value, its ebb and flood, according to the supply and the demand for it, and according to the opportunities of its profitable investment. Adam Smith assures us (and no sane mind can refuse its assent to the proposition) that "it may be laid down as a maxim, that whenever a great deal may be made by the use of money, a great deal will commonly be given for it." And is it not preposterous to enact, that no *more* shall be given for it, when much may be made by its use, than when very little can be made? He who makes much, can afford to give much; and he who makes little, can only give little. It is vain and ridiculous, therefore, for legislators to offer us their uniform measure of value, and to attempt to render that certain, *quod non certum reddi potest*. If they could create a sliding scale of interest, to follow the fluctuations of the market, it would be very well, but the effort has not been made, and is, I suppose, impracticable.

But let us inquire, if the second and chief object of the law be attained?—for if there be *one* good reason for it, it should not be expunged from the statute book. Do usury laws avert, or *tend* to avert, that oppression which the lender has it in his power to inflict, and does, so often, inflict upon the borrower? If the law can be *evaded*, so that the violator of its provisions cannot, by legal process, be subjected to its penalties, then, as a matter of course, the law fails of its object. But waiving, for a moment, the consideration of this question, and proceeding upon the hypothesis, that its penalty is *inevitable*—is it probable, that money-seekers could find any one so careless of his interest, as to lend them money at the *legal* rate, when that rate is far below the actual

value of the forbearance of money? In such case, would not capital seek investment in the various profitable branches of industry, or in the banks, insurance, or other joint-stock companies? For money is only worth more than the legal rate, because it can be more advantageously employed; and it would, therefore, be very unreasonable to assume, that money-lenders, with all their known astuteness, would loan at six per cent., when, by investments in the joint-stock companies, they could make from ten to twenty per cent., with equal security for the principal; and by employment in mercantile pursuits, with an increase of hazard, it is true, they could make still greater gains. Borrowers seek the loan, for the purpose of making these greater profits, and when those profits exceed very much a proper remuneration for the skill and labor of the borrower, after deducting the interest which he pays, monied men will keep their capital in their own hands, employ it on their own account, and reap, for themselves, these large profits; whereas, if they had been paid a full remuneration, they would have loaned their money, and permitted borrowers to make the profit, properly due to the skill and labor expended in the employment of the money loaned. But capitalists are not driven to this alternative. No statute, on this subject, has yet been made which the wit of man has not eluded. None have presented any serious obstacle to loans at a rate higher than the legal rate. They may be all easily evaded, and are evaded every day; and thus the law is daily brought into contempt through its inefficiency. If it be efficient at all, it is against the simple and weak-minded, who hardly know of its existence, or were too foolish, or too careless, to take the means of evading it; while the more cunning violators of its provisions, securely laugh at its penalties. There are a few cases in which the law is operative, and in these cases, by a singular legislative anomaly, it operates to oppress those who, by the general theory of the law, are peculiarly entitled to its favor. Where there is money in the hands of an administrator, or executor, or a guardian, or curator, for the benefit of distributees, legatees, lunatics and infants, and there is an order that it be loaned, it must be loaned at legal rates and thus, this class are made to lose the excess of the real, over the legal, interest of money.

The customary mode of evading the law, is for the borrower to make his negotiable promissory note payable to the order of some third person, who indorses it and sells it, at a discount greater than the legal interest, to the lender. The lender, to make himself doubly secure, takes a deed of trust, to secure its payment, and negotiates the note to some innocent party, in whose hands it is morally and legally unassailable. Since, then, each reason for its enactment fails, the law should be abolished, in accordance with the spirit of the old maxim—*cessante ratione cessat et ipse lex*—even if nothing more could be urged in favor of its repeal. If it be demonstrated, that it is practically inoperative—that it fails to attain its object—it should be discarded as a useless thing. It is public printing and paper wasted.

But it is only *inoperative for good*, while it is positively productive of evil. It increases the rate of interest, which it is its object to restrain within narrow bounds. It tends to strengthen, to support, and to keep alive, the common prejudice against those who exact an interest, called exorbitant, because it is ultra-legal. The law, however absurd it may

be, is made by men, who, coming from the midst of the people, reflect their passions, prejudices, and sentiments; and the individual weight of authority of these legislators (who, as they are, or ought to be, elected for their intelligence and integrity, have great authority with their constituents), added to the common respect for law itself, exerts a strong, retro-acting influence upon the people, and tends to strengthen and confirm the odium and aversion, in which they have been educated to regard the money *shaver*. In consequence, then, of this odium, reanimated by legislation, many men who entertain it, and more who lack the firmness to brave it, prefer employing their money on their own account, and will not loan it. It thus diminishes the *quantity* of money to be loaned, and, as it does not ratably diminish the demand, it follows, as a necessary consequence, the supply being diminished, and the demand remaining the same, or nearly so, that the price must be enhanced. As to the commonwealth, she neither loses nor gains much by these changes. It may be said, that by stimulating the borrower to greater exertions, in order to make his fair profits, and likewise to pay the exorbitant interest, the value of the productive industry of the state is somewhat enhanced. But upon the other hand, it may be urged that money-lenders are generally those, who, from sex, education, absence from profitable markets, or other causes, are unable to employ their capital as advantageously as those to whom they would lend; and that, by forcing them into the channels of trade (as we have seen they are forced by common prejudice, or their defect of fortitude to brave it), the community loses that *excess* of profit, which the borrower, by his skill in the more profitable branches of industry, and by his better knowledge of men and things, and the market, could make over the lender.

Again—it may be urged that the community loses, in a moral point of view, by tempting men to postpone the payment of their debts. If money be worth much more than the legal rate of interest, it is to the interest of the debtor to deceive his creditor, to put him off, to disappoint him, to drive him into courts of justice, and to inflict upon him the “law’s delays,” and all the swarming ills of litigation. This, certainly, debases men’s morals, if it does not strike a blow at prosperous trade itself, by impairing that *confidence* among men which is the great fly-wheel and regulator in the commercial machine. This is no imaginary evil: it is real, and of frequent occurrence. Many men now permit themselves to be sued, because, during all the delay of the law, they have the use of their creditor’s money, at the legal rate, when, in fact, it is worth much more. In this way, *some* have retrieved very desperate circumstances, and this is the only good which I have ever known to come of it.

It has been urged, that usury laws increase the rate of interest, by forcing the lender to incur the risk of the statutory penalty: but to this, it has been very properly replied, that there was no risk at all—it being perfectly easy to evade the penalty; and there being no risk, of course, there can be no charge for it.

There seems to me, however, to be one exception—in the case of small dealers, who cannot give such security as to make their notes readily negotiable. It may be remarked, too, that this class are, generally, the young and enterprising poor men of the land, who deserve

the encouragement of the legislature as much, certainly, if not more, than any other class of the community. Their negotiable notes, not possessing the credit of the rich man's, and not secured by deed of trust, cannot be negotiated, and remain in the hand of the first taker, who, being *cognizant* of the usury, is amenable to the penalty of the law, even in the case of a negotiable note. Were he able to pass it to a third party, who gives full consideration for it, without notice of the original usury, it could not be impeached. Hence, in the case of a poor man, they do frequently charge an extra compensation, in consideration of the risk which they run of incurring the penalty of the statute—a risk not incurred, and which, of course, cannot be brought into the account of charges, in the case of a wealthy borrower. Poor men likewise suffer, from the fact, that the law drives from the ranks of money-lenders, those good men who have scruples themselves, or respect the scruples of others, against violating it, while it leaves there only the grinding usurer, who will not hesitate to take advantage of the necessities of the poor, and exact from them a remuneration greater than the fair price for the loan of money. There must, of course, be a difference, at all times, between the rate at which money may be borrowed by a rich and a poor man. A poor man, who is unable to give as good security, must, and ought to pay more; but I think the usury laws tend to render the disparity greater than it would be naturally.

My article is already extended beyond what I had intended, and I do not know that there is anything original in it, of any merit. I must, therefore, bring it to a close.

The repeal of the law, would, of course, correct all the evils that have followed in its train. The support being taken away, the superstructure must fall.

The law appears to me inconsistent with natural justice, and to the right of every man to pursue, with perfect freedom, any avocation not noisome to the community. Most political economists have thought it pernicious to establish a legal, below the *real*, rate of interest, and have so written. But legislators, having eyes, would not see; or seeing, would not believe. They interpose between two persons about to strike a bargain, which they think mutually beneficial, and say to the lender, "Out! barefaced extortioner; do you not know that 'money is barren' (to a certain extent), and cannot procreate (beyond the limit); and that you are an enemy to your kind, in attempting to augment its vigor?"—and to the borrower, "Poor dupe! you were nearly ruined; we will take you under the protection of our wing, and prevent the consummation of so iniquitous a bargain." The borrower expostulates, but the wise *parentes patriæ* will not relent.

Oh! wise legislators! *filioli* of Aristotle, begotten in an *insane interval*, pardon a benighted wight who refuses to accord to your supervising wisdom a capacity, to take care of men's interest, greater than they themselves possess, in each individual case! Men were, aforetime, in need of a guardian; but now they are enfranchised and can take care of themselves. Or most learned law-makers, if you place your law upon the basis of morality, or religion, pardon me again, I beseech you, for believing that the patriot, Brutus, who took forty-eight per cent. interest, at Cyprus—that Moses, who permitted usury among

his people—that Christ, who rewarded those who made *centum per centum*, for the talents given them, was each not inferior to you—transcendental refiners in ethics, though you be! The maxim, *via trita via luta*, ought to be restrained by one equally true, *malus usus est abolendus*.

ART. IV.—SOUTHERN AND WESTERN MANUFACTURES.

RELATIVE COST OF STEAM AND WATER POWER FOR MANUFACTURING PURPOSES.

We call attention to this instructive and valuable paper, promising to continue the subject hereafter. The author is a practical man, and his views have been fully indorsed in the highest quarters. The question of our ability to compete with the East in the manufacture of cottons, turns very much upon the proposition here discussed. If steam power *here*, is cheaper and better than water power *there*, it must at once be admitted, the chief seat of cotton manufacture will, eventually, be over and near our central coal fields.—EDITOR.

WHILE we discuss this subject, let it be borne in mind, that water power, like all other things which exist in fixed quantities, must ever be circumscribed within the limits prescribed by the Creator. Hence, each quantum of water power, applied to practical purposes, reduces by so much the quantity to be appropriated. The consequence is, as one mill site is occupied after another, water power is increased in its market value, because, unlike articles which are the production of human art, and industrial efforts, the quantity cannot be increased with the increased demand. With steam power, where fuel is abundant, the case is precisely the reverse.

Steam engines, of any given power, may always be had to order, at any designated spot. No matter how rapidly you may multiply them, the supply will equal the demand. The materials for their construction cannot be exhausted, and human art and labor will ever be adequate to our wants. Under these circumstances alone, steam power would not be likely to increase in cost. But there is another very important consideration to be taken into the account. The steam engine undergoes continual improvement. The modifications of its form and structure, have for their objects perfection in action and economy in fuel. Vast strides have already been made in this work of improvement. This perfection is still increasing, and no one can predict, with certainty, how much more will yet be done, nor in how short a space of time, toward perfecting that useful and truly wonderful invention. All such improvements serve to reduce the cost of steam power, by reducing the quantity of fuel and labor necessary to a given result, while, at the same time, they increase its productive value, by rendering the steam engine more simple, more durable and efficient, as well as reducing its cost. Thus, all these causes combined, very much diminish the cost of steam power, while that of water power has increased; and the causes which have produced these results thus far, will still continue to operate. These facts are now beginning to be understood. Hence, steam power is gradually taking the place of water power.

To operate large manufactories, or other extensive works, to advantage, the motive power must be, not only ample, but also infallible; and, there-

fore, it becomes necessary to place them, if to be driven by water power, on streams having a great volume of water, with a rapid current and a great fall. Of such streams, there are very few in the west—the best, perhaps, being at Beaver, Pennsylvania, and at the Muscle Shoals, Tennessee. Most of the rivers on the eastern slope of the Alleghanies, are short and comparatively dry in summer. Even in New England, many corporations have found it necessary to purchase lands, and to construct reservoirs on them to contain water, to drive their mills in dry seasons, and which has been done at a heavy expense. The eastern mountains and hills are so steep, that the water passes rapidly from them to the sea; and, in the spring of the year, when the snow melts and the ice breaks up, and heavy rains fall, the force of the flood sweeps before it all ordinary obstructions. To withstand this almost resistless force, dams and locks must be of great strength, and consequently of great cost. The mills are, also, if practicable, placed at a distance from the river banks, and the water conveyed to them through canals. The falls, too, are on rocky formations, and, in general, at the gorges of hills—and which makes excavations, for canals, roads, sites for buildings, &c., &c., very expensive. The operations of mills, situated near the tide water, are frequently suspended by means of the floods or freshets above spoken of. Probably, Lowell is more nearly exempt from this difficulty, than Dover, New Market, Salmon Falls, and many other manufacturing places in New England; yet, Mr. Miles, in his history of Lowell, says, eighteen of the twenty-seven cotton mills in the city are situated on the river side, and once or twice each year are obliged to suspend part of their works, sometimes for days together, in consequence of back water. Occasionally, the ice carries the dam away, or breaks the water-wheel. In such cases, the pay of the operatives goes on, or a higher price is, for a time, put on the work. To estimate the loss, per diem, resulting to a company from suspension of its works, I give some of the statistics of the Merrimack Mill. This mill has a capital of \$2,000,000, and employs 1,737 operatives, at a cost of, say, \$240,000 per annum. Interest on the capital, \$120,000; making \$360,000 per annum, or nearly \$1,000 per diem, would be the loss, by the suspension of a single day, aside from the inconvenience. Again, the water-wheels must not be exposed to the frost, but inclosed in masonry—often in excavations in solid rock. Mills, driven by steam, are subject to none of these casualties, nor to the losses and expenses originating in them. Water power may be purchased, in other parts of New England, at a rate, nominally, cheaper than at Lowell; yet, taking all the local advantages into the account, it is, in reality, as cheap there as at any other place. The present cost of water power, at Lowell, is at the rate of five dollars per spindle. Nearly all the waterfalls in New England, are at considerable distances above the head of navigation; and the estimate is within the truth, when I give the distance from Boston to Lowell (twenty-six miles) as the average distance of the New England factory, from the point where its cotton is landed, and the depot of its goods; both of which are transported, either on rail roads or in wag-gons. From Boston to Lowell, the cost of transportation is \$1.25, and \$1.10, per ton. But, according to Doggett's Rail-road Register, the average cost on cotton and dry goods, between Boston and sixteen of

the most important manufacturing towns that receive cotton through that city, and send their goods to it for sale, is \$2.75 per ton. This is about the average price of such freight, per steamboat, between Louisville and points three hundred miles distant from that city. If, as will be shown hereafter, a very large portion of this heavy expenditure for land transportation can be avoided, by the use of steam as a motive power, the advantages will become self-evident. The amount of this expenditure is nearly as follows: A cotton mill, of 10,000 spindles, will turn off two and a half tons, per day, of cloth No. 14—say seven hundred and fifty tons per annum. One hundred pounds of cotton, will make eighty-nine of cloth; hence, seven hundred and fifty tons of cloth, will require for its manufacture about eight hundred and forty tons of cotton. This quantity of cloth and cotton, say about sixteen hundred tons in all, will cost, for transportation, \$4,320, at \$2.75 per ton, to say nothing of drayage, no inconsiderable item of itself. Besides these, is also the transportation of other heavy articles such as oil, starch, iron to replace broken and worn out machinery, coal to heat the mill, &c., &c., all in very considerable quantities and adding much to the cost.

The foregoing are some of the difficulties and drawbacks, though not all, connected with, or growing out of, the use of water power; and we will now proceed to state, on the other hand, some of the advantages derived from the use of steam power. On this subject, we will cite the results of practical operations, of very recent date, and state facts in which there can be no mistake.

The Naumkeag steam cotton mill, at Salem, Massachusetts, is a new establishment, containing about 31,000 spindles. It is the largest cotton mill in America, and the largest in the world in which the entire process of converting cotton into cloth is carried on under one roof. This mill was put into full operation in the month of January, 1847. The following is an abstract from the annual report, made to the President and directors of the corporation, under date of January 19, 1848:

"In the former annual report, the estimated cost of steam, to drive the machinery and to heat the mill, offices, &c., was \$11,420 per annum, including cost of oil, engineer, and firemen. Subsequently, in the actual working of the engine and machinery, experience has afforded satisfactory proof, that the sum stated will be amply sufficient to cover the entire cost. After having run the engine and machinery a sufficient length of time to become certain that there was no mistake in the foregoing statement, it was determined to make an experiment, to ascertain precisely the amount of fuel consumed per day. Accordingly, on Tuesday (yesterday), the 18th instant, with all the machinery at work, the trial was made, and the engine and machinery were driven, during all the working hours of the day, at full speed, with four tons and forty pounds of coal. It was deemed hardly possible, were not the fact placed absolutely beyond a doubt, that so large a quantity of machinery could be driven, for so long a time, by an amount of fuel so small. During this experiment, four of the six boilers were used to generate steam for the engine, and the other two to warm the mill, offices, &c. By the latter experiment, it was found, that two and a quarter tons of coal was sufficient to generate steam, to warm the various apartments, and to supply the 'machine shop.' {What is here termed 'machine

shop,' is the repair shop, which, during the experiment, was supplied with STEAM POWER, from the two boilers.) Hence, six and a quarter tons of coal will be found sufficient, per day, for all purposes for which steam is required. The four tons and forty pounds is an offset against water power; as the water mill requires to be warmed as well as the steam mill."

The Naumkeag mill has been in constant operation since the above report was made, and has fully corroborated the fact elicited by the experiment alluded to. We deduce from it, and from other data contained in that report, and, also, from other sources, the following statements and comparisons:

1st. Something less than 1,220 tons of coal, per annum, is sufficient to drive a mill of 31,000 spindles, on yarn of the fineness of No. 30.

This, at the present price in New England, \$5 per ton,	
will cost	\$6,100
Wages of engineer (720), and two firemen (600), per annum,	1,320
And oil,	600

\$8,020 per annum.

The water power at Lowell, for 30,000 spindles, would cost, at \$5 per spindle, \$150,000. Interest on that sum, at six per cent., would be \$9,000 per annum—or \$980 per annum more than the cost of steam power, to drive the Naumkeag mill. In addition to the cost of the water power is, also, that of foundations for a mill on the river bank. The cost of flumes, raceways, wheel-pits, water-weels, gearing, &c., necessary to the water mill, we offset against the cost of steam engine; the first cost of the former, as well as that of perpetuating them, is greater than of the later. The actual cost of foundations, however, on the river bank, for a mill of the capacity of the Naumkeag mill, would be, at least, \$25,000 more than that for a steam mill, of the same size, on a spot favorable to the purpose. The annual interest, on this difference, would be \$15,00, and which makes up a balance of more than \$2,500 in favor of steam power. And to this is to be added, the cost of transportation, provided the steam mill be located in the immediate vicinity of navigable waters.

We have said a mill of 10,000 spindles would manufacture 750 tons of cloth per annum, and to do it, work up 840 tons of cotton; of course a mill with 30,000 spindles would work up 2,520 tons of cotton, and turn off 2,250 tons of cloth, No. 14. To a mill at Lowell, this cotton must be transported by land from Boston, and from the mill the cloth must be returned to Boston. Here, then, is railroad transportation of 4,770 tons per annum, which, at \$1.25 per ton, the established rate produces the sum of \$5,962, and which, added to the foregoing items of cost of water, and its incidental expenses, would make an aggregate of some \$11,000—and leave a balance of nearly \$4,000 in favor of steam power. Besides this, as before stated, the transportation of articles such as oil, starch, iron, &c., is a heavy item—its gross amount would not be less than 200 tons per annum, which, at \$1.25 per ton, would cost \$250, and of coal for heating the mill, say 400 tons, the quantity used at the Naumkeag mill, would be \$500, making in all \$750.

Steam power is much better calculated for the manufacture of cotton

goods than water power. Steam power is created by art, and as long as the articles of fuel and water are at hand on any desired spot, that power can be perpetuated. Water power, on the contrary, is a natural production, and can be had only where nature has placed it, and then its supply and perpetuity depend altogether on causes over which, as a general rule, human art can exercise little or no control. Water power must be taken as it is, and where it is. Its quantity cannot, by human art be increased, nor can its location be changed. The consequences are, the amount of operations by water power must have its *maximum*, beyond which you cannot go. Steam power is indefinite—perhaps we might say, infinite, in its capacity for extension; and may go on to increase as long as human art and industry shall continue—"as long as wood grows, or water runs." In all cases where water power is to be used, you must go to it with your buildings, machinery, raw material, labor, and whatever else is required, however great the inconvenience may be, and however heavy the expense. On the other hand, if you determine to employ steam power, you can select your spot, where all you require is either at hand, or can be had at the smallest expense; and, having completed your arrangements, you call the steam power, which comes at your bidding, seats itself on a few scores of square feet, which you have allotted to it, and there continues during your pleasure, acting in obedience to your will, and increasing or diminishing as you may desire.

Steam power is much better adapted to the manufacture of cotton goods than water power, in respect to their quality, and, consequently, to their market value and ready sales. That description of goods is best, and commands the highest prices and most ready sale, which presents the smoothest surface, and the most firm and even texture. That description of cloth is decidedly the best. To produce this superiority, the quality of the raw material being equal to that of others, a certain degree of temperature and humidity of the atmosphere is indispensable in the manufacturing departments. In addition to this, there is also required a moving power, equable and uniform, and at all times perfectly under control. The temperature of a water mill may be partially regulated by means of a dry heat, so called, from stoves or furnaces; but not the humidity of the atmosphere: this is to be done only by the use of steam. A water mill, it is true, may be furnished with a steam apparatus to produce this effect, but it must be at a heavy additional expense, which would neutralize its benefits; while the steam mill already has the apparatus, which will warm and dry or moisten the atmosphere of the mill at a trifling cost.

Besides this, it is impossible to insure with water power, that equable and uniform motion, so essential to manufacturing purposes, at all times to be had from a good steam engine.

The foregoing statements and remarks, as far as they relate to the cost of steam and water power, are based on the results of actual experience in New England. Taking into account the facilities for steam power, as well as for most other elements of the manufacturing business, connected with a location on the lower Ohio, where that noble stream intersects the great coal field of Illinois, the difference in manufacturing there by steam, will be found immense in its favor, when compared with operations by means of steam or water power in New England. If,

under all the circumstances, steam can be applied in New England to advantage over water power, what may not be done at the spot above alluded to.

The article of fuel used in New England to generate steam for cotton mills, and for other manufacturing purposes in general, is that species of anthracite coal of Pennsylvania, termed Lackawana. This coal costs the consumer five dollars per ton, at the port of delivery. The quantity of this coal used at the Naumkeag mill, for all purposes, say, to drive the machinery and to heat the mill and offices, &c., during six months in winter, and driving the machinery during the balance of the year, would be 1,875 tons, allowing four and a half tons per day to drive the mill, and two tons per day in winter to warm it, and for all other purposes. At five dollars per ton, this quantity would cost \$9,375.

At Cannelton, on the lower Ohio, a superior article, pronounced by the first chemists in America, fully equal to the best cannel coal imported from England, can be had in vast abundance, at four cents per bushel. Allowing thirty bushels to the ton, its cost per ton at this rate, would be one dollar and twenty cents. Thus, the same quantity per annum, as above, for the Naumkeag mill, 1,875 tons, would cost but \$2,343—and less by \$7,031 than it costs for the mill at Salem; and that mill, from the superior character and arrangement of its machinery, equal to any in the world, probably consumes a smaller amount of fuel in comparison with its size than almost any other one in America. Let us now take for further comparison, a mill at Lowell, running 10,000 spindles. The water power would cost \$50,000. The interest per annum on that sum would be \$3,000.

Eight tons of coal, at Cannelton, nearly one-half the quantity consumed by the Naumkeag mill, with 30,000 spindles, would cost but	\$960 00
Engine (\$700), firemen (\$300) and Oil (\$300), per annum,.....	1,300 00

Making the aggregate cost of the steam power at Cannelton.....	\$2,260 00
--	------------

Actually less, by \$740 per annum, than the interest on the first cost of the necessary water power at Lowell. All other things being equal, then the manufacturer at Cannelton, would be assured that he stood at least on an equal footing with him who might command the best water power in America; and no objection against the use of steam power in New England, as to its cost, however good that objection might be there, would have the least bearing or effect on him. But we have other advantages over New England, far more important even than this. Among these is the difference in the cost of transportation.

A mill of 10,000 spindles will work up 850 tons of cotton per annum, and turn off 750 tons of cloth—sheetings, No. 14—averaging $2\frac{3}{4}$ yards to the pound, or something more than 4,000,000 of yards per annum. To transport this cloth from Lowell to Louisville for a market, will cost one-half of a cent per yard. To transport the cotton used in its manufacture, from a southern port to Lowell, will also cost at the rate of one-half a cent per yard of cloth; more than its transportation from the planter to Louisville or Cannelton. Hence, there would be a difference in our favor of one cent per yard in the manufacture of cloth, for a western or southern market, and the difference of one half of a cent, even if sent to an eastern market. The difference of one cent per

yard on 4,000,000 yards, would amount to \$40,000, which, compared with the manufactory of the East, would be saved per annum. This would be twenty per cent. on a capital of \$200,000, to be invested in the business.

The materials required for the erection of buildings exist in great variety and profusion on the very spot alluded to, and labor may be had from 25 to 30 per cent. cheaper than in New England, in consequence of the corresponding cheapness of almost every article of living. On the very borders of the cotton-growing regions, on the very brink of one of the noble rivers which constitute the great thoroughfares of the West, and with the great valley of the Mississippi for a market, the location at Cannelton stands unrivaled, as to its facilities for manufacturing, by any spot in the Union, whether we have reference either to communication, transportation, materials, labor, or the sale of the production of the spindle or the loom, or all of them. These remarks, and the statements which accompany them, are well substantiated facts and practical realities. They require no argument to sustain them, for, to any one at all acquainted with the manufacturing business, and with the circumstances named, or who will take the trouble to inquire, they will become self-evident. But, even in the city of Lowell, itself, a steam cotton mill was erected in 1846, with an engine of 190 horse power; and that this enterprise proves a profitable one, would seem to be pretty certain, from the fact that another has been commenced in that city, and is soon to be put in operation, with 10,368 spindles, and with 250 looms, with a capacity for about double that quantity of machinery. If, at Lowell, steam power can be made to compete successfully with water power, what may not be expected of steam power on the lower Ohio!

ART. V.—THE NORTH AND THE SOUTH.*

POSITION OF THE SECTIONS ON THE ADOPTION OF THE CONSTITUTION—CHANGES SINCE THEN—DECLINE OF SOUTHERN CITIES—PROPERTY NORTH AND SOUTH—SOUTHERN AGRICULTURE UNFAVORABLE TO GREAT CITIES—AVERAGE WEALTH AND COMFORT NORTH AND SOUTH—AVERAGE PRODUCT OF BREADSTUFFS.

The progress and prospects of the Northern and Southern sections of this Union involve some of the greatest and gravest questions of the age. Each has a form of civilization peculiar to itself, and to modern times. The confederacy which has been formed by their union has

* The paper which is now presented to our readers was read as an address, by Ellwood Fisher, Esq., to the Mercantile Library Society of Cincinnati. It excited great applause, and has been circulated with enthusiasm. Many thousand copies were printed at the expense of members of Congress. We yield to solicitations from all quarters, to publish it in the Review, that it may be the more widely read and preserved. For the first time the South has had justice done to her out of her own limits. It is our intention to complete hereafter the contrast of the North and the South in many particulars, which Mr. Fisher could not embody. The parallel can be traced further, and the South need not fear the result. The reader, by consulting our back volumes, will see that we have frequently struck into this field, and always in the most liberal spirit.

astonished the world by its success: but the world, as well as the two sections themselves, differ very widely as to the causes of this success, and the agency of the two respective systems of society in producing it. This controversy has long been advancing on the country, and now, in consequence of recent events, it has become general. In this part of the country, however, we have had but one side; and, as the subject is one of the first magnitude, I have thought it highly important that it should be well examined. In a commercial institution like this, it is peculiarly proper that the causes of the wealth, and the sources of the commerce, of the country should be well understood.

When the constitution of the United States was adopted, the population of the two sections of the United States was nearly equal—each being not quite two millions of inhabitants, the South including more than half a million of slaves. The territory then occupied by the two, was, perhaps, also nearly equal in extent and fertility. Their commerce was also about the same; the North exporting about \$9,800,540 in 1790, and the South \$9,200,500.* Even the property held by the two sections was almost exactly the same in amount, being about 400,000 millions in value each, according to an assessment for direct taxes in 1799.* For the first quarter of a century of the present government, up to 1816, the South took the lead of the North in commerce; as at the end of that period the exports of the southern States amounted to about thirty millions of dollars, which was five millions more than the northern. At this time, in 1816, South Carolina and New York were the two greatest exporting States of the Union, South Carolina exporting more than \$10,000,000, and New York over \$14,000,000.*

According to the assessments made by authority of the Federal government in 1815 for direct taxes, the value of property in the southern States had risen to \$859,574,697, the white population being then, according to an average of the census of 1810 and that of 1820, about 2,749,795, or about \$312 per head, whilst the property of the northern States amounted to \$1,042,782,264,* for 4,326,550 population, or only \$240 per head.

Even in manufactures, the South at this period, excelled the North in proportion to the numbers of their population. In 1810, according to the returns of the marshals of the United States, the fabrics of wool, cotton and linen, manufactured in the northern States, amounted to 40,344,274 yards, valued at \$21,061,525,* whilst the South fabricated 34,786,497 yards, estimated at \$15,771,724.* Thus, after the lapse of the first quarter of a century under our present form of government, the South had surpassed the North in commerce, in manufactures, and in the accumulation of wealth, in proportion to the number of citizens of the respective sections.

Since that period, a great change has occurred. The harbors of Norfolk, of Richmond, of Charleston and Savannah, have been deserted for those of Philadelphia, New York and Boston; and New Orleans is the only southern city that pretends to rival its northern competitors. The grass is growing in the streets of those cities of the South, which originally monopolized our colonial commerce, and maintained their ascendancy

* Pitkin.

in the earlier years of the Union. Manufactures and the arts have also gone to take up their abode in the North. Cities have been expanded and multiplied in the same favored region. Railroads and canals have been constructed, and education has delighted there to build her colleges and seminaries.

These phenomena have made a profound impression on reflecting minds throughout the Union, and particularly in the South. By her leading statesmen, these results have been ascribed to the policy pursued by the Federal Government since 1816. It was at this period that the system of direct taxation was finally abandoned, and the whole interest of the public debt, then so much augmented by the war, as well as the increased expenditures of the Government, were made chargeable on the foreign commerce of the country, except the slight income from the public lands. And, as at the close of the war, the principal articles of export, in exchange for which we obtained our foreign goods, consisted of cotton, tobacco and rice, it was held that the new policy was a peculiar burden on the States that produced those staples. In addition to this, the establishment of a bank of the United States, located at the North, with large deposits of government money, and enabled by the confidence of the government to maintain a large circulation, which would naturally be devoted to the promotion of northern commerce, it was thought was also adverse to southern commercial rivalry. These two measures were the work of a republican administration of the government, but they were strenuously opposed by the states-right party. On their passage in Congress, it was declared by John Randolph, one of the most profound and sagacious statesmen Virginia or any other country ever produced, that a revolution in our government had occurred, whose consequences no man could calculate. The result verified this prediction. Our population is now twenty millions, and yet it is thought by all parties, that twenty-five millions of dollars per annum is enough for the support of government in time of peace. Yet sixteen years ago, when our population was but little more than half of what it is now, this government exacted \$32,000,000 as duties on our foreign imports, and that too when, in consequence of this heavy burden on our foreign trade, we only imported 64,000,000. The government took half the value of the imports as a tax on foreign trade. This outrage was the cause of South Carolina nullification.

Now the power of the Federal Government over foreign commerce is by the constitution precisely the same as over that among the States. It is a power to regulate only. And the South contended that inasmuch as the imports from abroad were the proceeds chiefly of her staple exports, and were, therefore, to all intents and purposes, the product of her industry and capital, that there was no more *constitutional* right to tax them on arriving in our ports, than to tax the products of the North when shipped to the South.

When, therefore, the statesmen of the South reflect on the great commercial and manufacturing prosperity of their country in the days of direct taxation, and behold now her dilapidated cities and deserted harbors, under the change of system, is it wonderful that they have made the halls of congress eloquent with the ruin and wrong they have suffered? Or it is wonderful that the North, whilst it cannot believe that

what has been so conducive to its own prosperity should be detrimental to others, should yet take the South at its word as to its decline and seek for other causes of such a result. This has been done, and negro slavery has, with extraordinary unanimity, been fixed upon as the great and efficient cause of southern decline. And it is now assumed that the South, particularly the older States, is undergoing the process of impoverishment, depopulation and decay. At the North she is continually spoken of, by almost all classes, in terms of mingled condemnation and pity. She is accused of idleness, ignorance, cruelty and pride. She is advised to emancipate her slaves, and emulate the North in enterprise, industry and civilization.

The first object of civilized life is to accumulate wealth, as on that depends improvement in science and the arts and the supply of the multiplied wants of society in that state.

And hence it is, that the South is declared to be falling behind the civilization of the age, and is advised to abandon her peculiar institution in order to avoid the disastrous condition of ignorance and barbarism that awaits her.

Now, in an age like this, of pre-eminent intelligence, with the school-masters all abroad—with the universal diffusion of the press and the post, and on a question like this, of the first magnitude and the least complexity, and whilst the people of the two sections are continually traveling amongst each other, and engaged in discussions with one another in stages and steamboats, in cars, in hotels, on the stump, and in congress—it is scarcely credible that a universal mistake prevails as to the facts. Yet, in opposition to the existing opinion on the subject, I maintain that the South is greatly the superior of the North in wealth, in proportion to the number of their *citizens* respectively; and this will appear by a comparison and progress of the white people of the respective sections. The North, and even many in the South, have assumed a decline in manufactures and commerce to be a decline of general prosperity. This is an error. The policy of the Federal Government, and the domestic institutions of the southern States, have indeed been unfavorable to the latter in those pursuits, but the agriculture of the South has maintained and advanced in prosperity beyond that of any other people.

Let us first examine the condition of the white people of the two sections.

The State of Massachusetts, for instance, is generally regarded as one of the most successful and flourishing of the North; and is constantly referred to by the newspapers as a model for all the others, and very frequently as a taunt to the southern. If, however, we compare this favorite of the North, with Maryland, a southern State, of similar territorial extent, and one of the least of the southern States, we shall find the latter to be decidedly superior in wealth in proportion to the number of her citizens. According to the census of 1840, Maryland had a free population of 380,282, and in 1847 her property was assessed at \$202,272,650.* Massachusetts, in 1840, had a population of 737,699, and her property now is only \$300,000,000. Taking these two assessments as the basis of comparison, and it appears that the average

* American Almanac.

property of a free person in Maryland was \$531, whilst in Massachusetts it is now in the palmiest days she has ever seen, only \$406 per head—the freeman of Maryland being about 25 per cent. the richer.

The States of New York and Virginia are both of great territorial extent, and not materially unequal in that respect. New York is also regarded, habitually, as one of the grandest products of free institutions; and the present condition of Virginia is continually referred to, as a striking and melancholy result of slavery. Her poverty, her ignorance, her idleness, her decay and her misery, are the threadbare topics of modern political philosophy here and abroad. Let us now consider the facts. Her free population in 1840, according to the census, was 790,810, and her property is now about \$600,000,000.* The population of New York in 1840 was 2,428,921, and in 1847 her property is assessed at \$632,699,993. The average property of a free person in Virginia is \$758: in New York it is only \$260, or a little more than one-third.

Virginia, instead of being poor, and in need of the pity of the much poorer population of the North, is perhaps the richest community in the world. The average wealth of the people of Great Britain may be about the same, but it is not near so productive; and I think it demonstrable, that no people on earth live in a condition of greater comfort and enjoyment than those of Virginia. Nor is there any reason to fear a decline in her wealth. According to the census returns of 1840, Virginia, with a free population of less than one-third of that of New York, and a capital something less, produced, from the various branches of her industry, more than half the product of New York; and as the total population of Virginia, slave and free, is only about half of that of New York, it is clear, that after deducting the annual consumption of both, Virginia will have a larger proportional surplus remaining to augment the stock of her permanent property.

If now we examine the relative condition of the new States, the same results are apparent. The States of Kentucky and Ohio lie side by side, and are of similar climate, fertility and extent—the proportion of rich land being, however, less in Kentucky. Their age is also nearly the same, Kentucky having been admitted as a State about eleven years before Ohio. Ohio is considered the most prosperous State in the West, and is continually contrasted with Kentucky for the purpose of illustrating the blighting effects of slavery on the latter. Let us see with what reason.

In 1840, Kentucky had a free population of 597,570, and her property amounts, according to her tax assessment of 1848, to about 272,847,696.† Ohio, in 1840, had a population of 1,519,467, and her assessment last year was 421,067,991.‡ The average value of property belonging to each free person in Kentucky is \$456—in Ohio it is only

* The property of Massachusetts is stated according to recent estimates in her papers. That of Virginia was computed at the amount now assumed in 1834 by Prof. Dew. I have seen no official statement. But if she taxes other property as high as negroes, the total must now far exceed that estimate, as in 1847 she taxed 252,317 adult slaves at \$80,741, who are worth about \$400,000,000, and taxes her other property, real and personal \$354,454, exclusive of merchant's stock, and the Governor's message states there has been an increase of five per cent. in every item of taxation last year.

† Ky. Auditor's Report, 1848.

‡ Ohio Auditor's Report.

\$276, or more than one-third less; and as the population of Ohio is now still greater in proportion to that of Kentucky than in 1840, the difference in favor of the latter is still more.

Nothing is more common than the opinion that the price of land in Kentucky is, in consequence of slavery, much lower than in Ohio. I have examined the Auditor's reports of both States, which present in detail the valuation of all their lands. In Kentucky the average value is about seven dollars per acre, in Ohio it is about eleven, and I am very confident that the quality of Ohio land is to that extent superior—as in Kentucky there is a large mountain region, for which Ohio has nothing equivalent. Thus, then, it is manifest that the free people of the slaveholding States—of those States which are uniformly regarded as the victims of property and ruin—are all richer, much richer, than those of the non-slaveholding States, which have been usually considered as the most flourishing members of this Confederacy, and the most prosperous communities the world ever saw. Such at least is the testimony of official documents on the subject—the highest authority that exists. For I have taken nearly all these statements of the property of the several States alluded to, from the assessments made by public officers for the collection of taxes. Of the accuracy of the valuations, it is of course impossible to speak from personal knowledge;—but those of the Ohio and Kentucky are, according to my opportunities of observation, as nearly correct as need be desired. As to the other States the chances of error are perhaps as great on one side as the other.

In the slaveholding States, slaves are of course included in the property. This is sometimes objected to, but I think without reason. The question is, which is the most profitable investment of capital—in land and slaves, as is usual in the slaveholding States—or in land alone, or commerce and manufactures, as in the northern States? And this question is almost universally decided in favor of the latter. In the South, according to its laws, the slave is as available to his owner for the purposes of property, as any other property. The North has held, however, that this peculiar species of property, instead of being profitable to the owner, has been impoverishing and ruinous. And in contradiction to this I have shown that in every community where it exists, there wealth abounds to a far greater extent than in the States from which it was excluded, whatever may be their climate, soil or territory. But even if the assessed value of all the slaves in Kentucky, Virginia and Maryland, were left out of the schedule of their property, the white people of those States would still remain wealthier, on an average, than those of Ohio, New York, and Massachusetts.

By others again it is contended, that in estimating the average wealth of individuals in a community, the slaves ought to be included as persons, and left out as property. This, I think, is also an error, for the reason before stated. Where it is contended that the white man ought to abandon slave property, because it makes him poor, or prevents him from getting rich, it is absurd to assert that he not only has no property in his slave, but that other property belongs equally to him. But if for any other purpose or view of political economy, the slave be included with the freeman in averaging the property of a State, it will even then appear that in the States I have considered, the southern are still wealthier.

than the northern, counting the slaves as persons and deducting them from the property. So that in no aspect of the question whatever, is there any foundation in fact for the popular delusion that the southern States, or any of them, are either now or heretofore, or likely to be hereafter, inferior to their northern neighbors in wealth—but the reverse.

The triumph of southern enterprise and capital in the accumulation of wealth being established as a fact, demands of us an investigation of its causes—and this, I think, will materially elucidate the character of modern civilization, and particularly that which has been developed in the United States.

The original methods of acquiring wealth, adopted by men on their organization into communities, was by conquest or commerce. Hence, the almost exclusively military character of one great class of the ancient states; which resulted in the universal empire successively of the Assyrian, Persian, Greek and Roman governments; and hence the rise of Tyre and Carthage. Hence, also, in the middle ages, the empire of Charlemagne, and the long protracted efforts of France to conquer England, and England to conquer France—and the wealth of Venice, Genoa and Holland. At a later period, when the arts had made more progress, manufactures were included in the means of creating wealth. The policy of England has combined the three—conquest, commerce and manufactures; and by these she has succeeded in the construction of an empire which, for extent of territory and wealth, has never had a parallel. The policy of England has been dictated by her insular position. This rendered it necessary for her to acquire the empire of the sea, to be secure from invasion by great continental powers, and with the dominion of the sea, it was easy to establish a great colonial empire. The growth of such a great power in commerce, was the strongest possible stimulus to progress in the arts and manufactures; hence, her success in them. But an extraordinary development of commerce and manufactures has always resulted in the concentration of large masses of people in cities, which causes inequality of condition, great depravity of morals, great increase of want and of crime; consequences that are fatal in the first place to liberty in governments, and finally to independence in nations. This tendency has been so obvious and universal among the great States of all ages, as to have caused the belief that communities, like individuals, contain within themselves the seeds of dissolution which must ultimately bring them to the dust.

But whether we consider a State as a moral being, whose essence consists in the principles on which it is constructed, and therefore not necessarily mortal, or whether we regard it as a mere creature of the race or persons that founded or inhabit it, and therefore transient, there can be no doubt that its prosperity is seriously impaired by the evils referred to, that generally attend the progress of civilization.

Rural life has always been celebrated by the poets for its innocence.

“God made the country and man made the town:”

But it is a kind of life that has seldom been thought favorable to the accumulation of wealth—the first want of civilization. It is also usually associated with rudeness of manners. Hence, the votaries of fortune and society have preferred the city; and, if to these we add the vast multitude

who seek the immediate gratification of their appetites and passions, which cities afford, at the hazard of future want, we have a clear solution of the undue tendency to city at the expense of country life. This great evil, sufficient of itself to cast a stigma on civilization and even ultimately to destroy it, was for the first time successfully encountered and conquered by the institutions of the South; and in the great achievement Virginia led the way. Amongst the early white settlers of Virginia were many of the Cavaliers who had been driven into exile by the triumph of the Roundheads and of Cromwell. The Cavaliers were of the country party in England, the cities and towns were more generally devoted to the Roundheads. The Cavaliers of Virginia seem to have brought over with them from England a hostility even to the modes of life of the enemies they left behind them, as the settlers of New England, on the other hand, from the Roundheads, became highly commercial. These peculiarities were exhibited in a striking manner in the progress of the two colonies. Bancroft tells us:

"But the greatest safeguard of liberty in Virginia was the individual freedom of mind, which formed of necessity the character of independent landholders living apart on their plantations. In the age of commercial monopoly Virginia had not one market town—not one place of trade. As to all outward appearance it looked all like a wild desert, and the mercantile world, founding its judgment on the absence of cities, regarded it as 'one of the poorest, miserablest, and worst countries in America.' It did not seek to share actively in the profits of commerce: it had little of the precious metals, and still less of credit—it was satisfied with agriculture. Taxes were paid in tobacco; remittances to Europe were made in tobacco; the revenue of the clergy, and the magistrates and the colony, was collected in the same currency; the colonial tradesman received his pay in straggling parcels of it, and ships from abroad were obliged to be whole months in the rivers, before boats visiting the several plantations on their banks could pick up a cargo. In the season of a commercial revolution, the commercial element did not enter into the character of the colony. Its inhabitants 'daily grew more and more averse to cohabitation.'"

Such was the character of Virginia in 1700—ninety-two years after the colony was founded, and seventy-six before her Independence—such she has remained. I have seen a law passed by her legislature during the revolutionary war, prohibiting merchants from serving as Representatives in the Continental Congress.

But this primitive character of Virginia could not have been preserved to the extent we now behold, but for peculiar circumstances. The soil of Virginia was found to be adapted to the cultivation of tobacco, and African slave labor to its cultivation; and tobacco soon became an article of commerce. The introduction of this sort of labor had the effect of excluding, in a great measure, emigration from Europe—the emigration which subverted the ascendancy of the Quakers of Pennsylvania—which has materially modified the original character of New England, and still more of the new free States of the West. And it has been through negro slavery that agriculture has been made, for the first time in the history of the world, so profitable and attractive as to render rural life the favorite of wealth as well as of the mass of the people—to make the country, instead of the towns, the abode of elegant manners and refined taste. And this system of society has prevailed throughout the other States of the South, owing to the similarity of their primitive character to that of Virginia—to her example—to emigration

into them of many Virginians—the warmth of the climate, and to the culture of cotton, which is more favorable to the employment of slave labor than that of tobacco.

Thus, then, we have fifteen Southern States—one-half of the number belonging to the Union—occupying half our territory—who present the extraordinary and, so far as my researches extend, the unparalleled result of a population which has acquired greater wealth by agriculture, than any other people in any other manner; and who have consequently given ascendancy within their borders to country life over city, in social and political power. In Great Britain, the only country which can be compared in civilization with ours, the landholders are indeed a very wealthy class, perhaps the most so, but they have dwellings in London, and pass a large part of the year there. The landholders of great Britain also constitute but a small portion of the population.

We must now consider the effect upon the various elements of civilization, of a population at once wealthy and rural like that of the South.

In communities which have acquired great wealth, it is almost universal that such wealth is very unequally distributed. Extreme poverty and extreme wealth characterize the population—but the mass are poor. This is perhaps inevitable where manufactures, or commerce or conquest, are the means of acquisition. And in England this is strikingly displayed. But it is not so in an agricultural people. I know it is a common opinion, that much greater inequality of property exists in the South than in the North. But although I do not possess exact knowledge on this point, there is enough known to prove that this cannot be the case. The State of Virginia allows none to exercise the elective franchise but white freeholders, leaseholders of five years and housekeepers who are heads of families. Now it appears, by the returns of the Presidential election of 1844, that Virginia gave about 95,000 votes; allowing 10,000 for voters who did not attend the polls, and it appears that there are 105,000 free white males in that State who are either freeholders, leaseholders or housekeepers and heads of families, and by the census of 1840 there were only 157,989 white males in that State above the age of twenty-one; so that two-thirds of them are either freeholders, leaseholders, or housekeepers. I do not know what proportion of the Northern States are freeholders, but I have seen a detailed statement, from one of the interior counties of New York, from which it appears that only half the voters were freeholders; and when we consider that the cities of New York and Boston contain nearly half the property of the States to which they respectively belong, and that in those cities pauperism prevails to greater extent than any where else in the Union, it is clear that great inequality of property prevails.

The state of Ohio, a new State and an agricultural one, and very prosperous, may be presumed to enjoy a tolerable equal distribution of property. There are in this State, by the last assessment, about fifty thousand pleasure carriages, and the possession of one of these, is an indication of a comfortable condition of a family. In Virginia there were in 1847, over 19,000; and that in a white population about one-third as great as ours is now. This proves that the degree of comfort which such establishments indicate, is more diffused in Virginia than in Ohio. The proportion of dwellings built in a year, is another indication of comfort, and

the degree of its diffusion among a people. According to the returns of the marshals in 1840, Massachusetts, whose white population is nearly the same with that of Virginia, built 324 brick houses in that year. Virginia built 402, or nearly one-fourth more. Massachusetts built 1249 wooden houses the same year, Virginia, 2604, or more than double. The cost of the houses in Massachusetts was \$2,767,134; in Virginia, only \$1,367,393, or about half. Now if this excess in the cost of the houses of Massachusetts be attributable to the excess of business, or manufacturing structures among them, it swells the proportion of dwellings built in Virginia, and thus displays a still greater progress in comfort among the population of the latter. But if the excess of cost in Massachusetts is owing to the superior style of her dwellings, it proves, since the number is so much less, a still greater inequality of property. A comparison of the houses built in New York the same year with those in Virginia, exhibits similar results. And I will add that the same thing is true, by a comparison between Virginia and Ohio, although one is considered the most declining, the other the most advancing, State in the Union; one supposed to be the most unequal in the distribution of property, the other the reverse. In 1840 Ohio built 970 brick and 2764 wooden houses, at a cost of \$3,776,823. Thus, while we had twice the white population, we built only a fourth more of houses. Kentucky, also, as well as Virginia, surpassed Ohio in this respect. Kentucky built 485 brick, and 1757 wooden houses; thus, with only 40 per cent. of Ohio's white population, she built 75 per cent. of the number of houses Ohio did. The fact is that Virginia and Kentucky constructed in that year, more buildings in proportion to their whole population, black and white, than Ohio and Massachusetts. This result does not appear, indeed, in the cities, or in the principal streets of cities, and therefore has not come to the knowledge of fugitive and superficial observers, or newspaper item-mongers, but it is demonstrated by the labors of the officers of government, who were required to visit the country as well as the towns, the bye-ways as well as the highways, and it is triumphant evidence of the extraordinary aggregate prosperity and wide-spread individual comfort of the States which have been selected by the new School of politicians, and political economists, as the objects of their sympathies and the victims of their theories.

The same relative condition of comfort in the two respective sections of the Union, is indicated in their food. Although Virginia is not an exporter of animal food, she is one of the greatest producers of it, of all the States. In 1840 she possessed 1,992,155 hogs, which is almost identically the same number that Ohio had, although Ohio has twice the white population, and, as is well known, is a large exporter of pork, while Virginia imports, in addition to her own stock, every year, a large quantity. New York, with three times the white population, was materially behind Virginia in this respect. Now, it is well known that the great mass of provisions produced in any State, are designed for domestic consumption, as the cost of transporting them to the dwellings of an agricultural people is too great to admit of their importation. Hence, the products of such a people afford a good criterion of the character of their food. The stock of neat cattle in New York was 1,911,244; in Virginia it was 1,024,148, the proportion of Virginia being still the

greatest. In sheep alone, was New York better off, having 5,118,777, whilst Virginia had 1,293,772, which, however, is only about 150,000 less than her share. The proportion of poultry in Virginia is double that of New York. And in all these articles Virginia is still more the superior of Ohio than of New York. So, also, is Kentucky. So that if it be said that New York is an importer of such provisions, and therefore consumes more than her production indicates, what is to be said of Ohio which exports them all. Now, in determining the relative comfort of two civilized communities in the same climate, the quantity of animal food they respectfully consume is a well established criterion. Yet, here is a State in the warmer climate, consuming the greater proportion. For when it is considered that the hog is killed for food at the age of eighteen months or two years, and neat cattle at five or six years, it will appear that the excess of animal food in Virginia or Kentucky over New York or Ohio is quite large—is quite large, indeed, even if we include the slave as well as the free population of the former States.

A reference to the quality of breadstuffs and other vegetable food, leads to the same conclusion. Virginia is the largest producer of wheat, the finest and costliest material of bread, of any other State, according to her population. Her crop of 1840 was 10,109,716 bushels; that of New York was only 12,286,418; of Ohio, 16,571,661. All these are wheat exporting, as well as wheat consuming, States, but still the great mass of that article must be consumed in the respective States of its production. In proportion to her white population, Virginia produces twenty-five per cent. of wheat more than Ohio, and two hundred per cent. more than New York. How is the deficiency supplied in New York? Not by importation, but by the substitution of potatoes, that cheapest article of vegetable food, to which the misfortunes or improvidence of Ireland have driven her. New York, instead of producing her proportion of wheat with Virginia, which would be thirty-five millions of bushels, instead of twelve, produces annually thirty millions of bushels of potatoes, and it is remarkable that Virginia, with nearly half a million of slaves, instead of resorting to this cheap food for them, produces only about three millions of bushels of potatoes, and provides her negroes with corn, of which her annual crop is about 34½ millions of bushels, and which is a much more costly and substantial article of food. The tendency manifested by New York to prefer the cultivation of the cheapest, but the more precarious and less nourishing article of vegetable food is also distinctly visible in all the Northern States, and is a fact which always deserves to be considered in any estimate of their present and future comfort. In Massachusetts agriculture is rapidly declining—particularly the production of the finer sorts of breadstuffs; a fact which is admitted and lamented by one of her leading papers—the Boston Atlas. The following statements are from the official returns of the State:

	Bush. Wheat.	Ind. Corn.	Barley.	Rye.	Buckwheat.	Potatoes.
1840	210,000	2,203,000	156,000	563,000	102,000	4,850,000
1845	48,000	1,985,000	121,000	447,000	32,000	4,769,000
Decrease,	162,000	218,000	34,000	116,000	70,000	83,000

Of course, it is not pretended that States of a commercial and manufacturing character chiefly, should produce as much* from the soil in proportion to population, as the agricultural. But the articles they do

produce, and their proportions to each other, indicate the quality of food at least of the agricultural population. Hence, it appears that the farmers of Massachusetts consume but little wheat bread, and use rye, Indian corn and potatoes as substitutes.

(To be concluded in our next.)

ART. VI.—AGRICULTURAL AND PHYSICAL CAPABILITIES OF SOUTH CAROLINA.

TERRITORY—CLIMATE—SOILS—SWAMPS—NAVIGATION—HEALTH—NATURAL MANURES—MINERALS—AGRICULTURE—PRODUCTS.*

WHAT, then, are the agricultural capabilities of South Carolina? In richness, variety and abundance, perhaps, no part of the habitable globe, of the same territorial extent, exceeds them. Of the four great materials for human clothing—cotton, wool, silk† and flax‡—her climate and soil are peculiarly well adapted to the first three, and in locations to the last. Of the prominent articles of food, she produces rice, wheat, Indian corn, oats, rye, barley, sweet and Irish potatoes, and the different varieties of the pea tribe. For the habitation of man, the earth, her granaries and forests, furnish an inexhaustible supply. Iron, so essential to the wants of every class in society, is superior in quality, it has been ascertained, to any found in our country. Gold, not too abundant to divert from other and more profitable pursuits, but an inconsiderable amount of capital, excites the enterprise and rewards the labor of a portion of our citizens. In other minerals, hereafter to be noticed, she is neither deficient in quantity nor value. While the woods abound in game, including the deer and turkey, the ocean which laves her southern border, and the numerous streams, both salt and fresh, that penetrate every part of her surface, yield almost every variety of the choicest fish. In relation to medicinal and culinary plants, her catalogue is large. To tobacco, indigo§ and hemp, which once were staple commodities; fruits

* We are obliged to Governor Seabrook for his most able and elaborate essay upon the agricultural capacities of South Carolina, and the means of improving them—"prepared at the request of the State Agricultural Society." From this essay we make such extracts as appear above, and regret space will not admit of more. Governor Seabrook passes in review the whole duty of the State and its citizens, in regard to public wealth. He is particularly excellent in the discussion of "agricultural societies"—"the pine lands"—"reclamation of swamps"—"deep plowing"—"drainages"—"manure"—"peat"—"sheep walks"—"the grasses"—"rotation of crops"—"the cow pea," &c. We are happy to perceive the Governor found use for our labors, which he has once or twice acknowledged in his essay, and would have been a little happier, perhaps—we say it pleasantly—had he dignified our REVIEW with a place in his *catalogue* of works valuable or useful to agriculturists, the more especially, as he was indebted to it for this very catalogue, which we prepared, some time ago, with much pains. See Com. Review, vol. IV, 444.

† In 1759, South Carolina exported 10,000 lbs. of raw silk.

‡ *Linum Virginicum*, or Virginia flax, is an indigenous plant, and of the same family with *linum usitatissimum*, or common flax.

§ Except in Orangeburg, where it is still a source of profit to a few planters, indigo is nowhere grown in South Carolina. That it is not inferior to that of India, has, I understand, been recently proved.

and esculent vegetables that every where greet the eye; and other productions which minister to the comfort or necessities of her people, it is needless in this place especially to direct your notice. So remarkable indeed is her topographical condition, that wheat* and the sugar cane grow profitably side by side; and the orange and the olive ripen under the provident care of the same family of cultivators who extract the saccharine matter of the maple, but essay in vain to secure the maturity of the native corn of America.†

To comprehend this subject in all its relations, a more detailed examination is necessary.

1. South Carolina is most favorably situated,‡ not only with regard to the States of the Union, but to the other portions of the globe. Midway between the frozen regions of the North and the burning heats of the tropics: in her climate, seasons and productions, it has been justly represented, that she combines most of the advantages of all. If we except tropical fruits, to which frost is fatal, her capacity successfully to rear all the grains, fruits and esculent roots, which enrich more southern countries, is nearly certain. Her latitude for cotton enjoys an extraordinary advantage. Much further South, the forcing nature of a vertical sun develops the plant too rapidly, thereby running it into weed and foliage; it is from the same cause most exposed to the ravages of the caterpillar and other insects. Further north, the season is too short to mature an abundant crop of balls, while the staple degenerates and becomes less valuable.

From the Sea-Islands the best cotton known to commerce is exported. So circumscribed are the limits in which it can be grown, that a half degree ($32^{\circ} 10'$ to $32^{\circ} 40'$ north latitude) of the sea coast of North America, seems to be the precise point where the length, strength and firmness of the fibre are most happily blended. In reference to rice our State enjoys almost a monopoly.

2. South Carolina includes 30,213 square miles, or 19,435,680 acres. Of this area, there is as little land in one body, the highest authorities§ assure us, unsusceptible of remunerating culture, as the United States can furnish. Undistinguished by mountains with their agricultural disadvantages, it is worthy of remark, that the spurs that make out from the great range which separates the waters falling into the Atlantic ocean and into the Gulf of Mexico, are capable of profitable tillage to their very summits.

3. As a difference of twelve degrees of latitude exists between the western and eastern hemispheres, the countries of the latter which are subject to the same atmospheric influences with South Carolina, comprise the most delightful and fruit-bearing portions of France, Italy, Turkey in Europe, Russia, Tartary and China.

4. Between the primitive and alluvial formations, the State is nearly

* Wheat is cultivated in the State, with advantage, as low as N. L. $32^{\circ} 30'$.

† From bleak, cold winds, the northern side of the glassy mountains, it is said, will not produce maize.

‡ Between $32^{\circ} 4' 30''$ and $35^{\circ} 12'$ north latitude, and $1^{\circ} 30'$ and $6^{\circ} 54'$ west longitude from the capitol at Washington; or $78^{\circ} 25'$ and $83^{\circ} 49'$ west longitude from Greenwich.

§ Messrs. Ruffin and Tuomey, late agricultural surveyors of the State.

equally divided. The soils, though of every kind, may be said to comprehend six varieties,* each the best suited to a certain crop, yet all of them capable of advantageously producing three-fourths of the vegetable products grown in its limits. While local differences are everywhere observable, the surface and soil of the upper districts present a great similarity; and this is equally true of the lower country. In the former, the lands are broken and hilly; in the latter, level; oak is the natural growth of the one; pine of the other. Clay is the soil of much the larger portion of the State; and, except in the immediate vicinity of the ocean, is almost the universal substratum. A close, stiff land predominates generally in the parishes, and an open sand on the Sea-Islands.

The high lands of the country, above the falls of the rivers, are naturally much superior to those of the pine-covered region—but the alluvial bottoms of the former are greatly surpassed in richness by the river swamps of the latter. In its capacity for permanent improvement, the granite half of the State has been more highly favored by nature than the alluvial. This is mainly ascribable to the open texture, permeable to water, of its clayey subsoil, and the potash in the soil and subsoil formed by the decomposition of the felspar and mica of the granite. In a few localities, however, the depth of the substratum and its proximity to the surface offer serious obstacles to a higher production. These, among other causes, seem yet to be operating against the cultivation of perhaps the greater part of those peculiar soils known as the "Flat Woods" of Abbeville; those in the neighborhood of Dutchman's creek and Wateree creek in Fairfield; and the Black Jack lands of Chester. Deriving their fertility from the hornblende† of the disintegrated rocks which lie below the close clay subsoil, it would appear that steady industry, incited and directed by ordinary skill, was alone wanting to preserve and perpetuate the uncommon productiveness, which, in despite of long-continued and improvident tillage, still distinguishes these remarkable tracts of land.

In reference to the soils of the primitive country, to one more peculiarity only, shall I now advert. Where the rocks lie horizontally, it is known that the soils derived from clay States frequently suffer from the impenetrable nature of the sub-soil and the position of the underlying rocks. In the regions to which they are confined in this State, they "are all highly inclined, presenting their edges to the surface and allowing the water to percolate between the strata."

5. The swamps, covering 2,000 square miles of land of inexhaustible fertility, are capable of thorough and economical drainage, and conversion into active and available capital.

The pine lands, embracing about 6,000,000 of acres, constitute the most neglected section of the State. While in some quarters, they are erroneously regarded as valuable only for the abundance and quality of their timber, in others, the belief is equally unsound, that their produc-

* 1. Tide swamp, now appropriated to the culture of rice; 2. inland swamp, to rice, cotton, corn, peas, &c.; 3. salt marsh, to long cotton; 4. oak and pine, to long cotton, corn, potatoes, &c.; 5. oak and hickory, to short cotton, corn, &c.; 6. pine barren, to fruits, vegetables, &c.

† Hornblende contains about 12 per cent. of lime, and about 30 per cent. of iron.

tive capacity is limited to plants which flourish solely in a thin and feeble soil. That, in all its relations, it is a district of country of immeasurable value to our community, will hereafter be attempted to be shown.

6. South Carolina is most bountifully supplied with water. The base of her triangular form is washed by the ocean, and one of her lateral sides rests on a river accessible to vessels more than one-half its length, and small boats 100 miles beyond. Many bold and navigable streams, with numerous tributaries coursing through her territory in every direction, disembogue into the Atlantic at distances from each other the most suitable for the purposes of intercommunication and traffic. Before reaching the points where all traces of their distinctive character are lost for ever, by united contributions, they form a bold channel between the main land and the Sea-Islands the entire width of the State. Apart from the creeks and inlets of the sea, there is now an inland navigation equal to about 2,400 miles.

7. Greenville is the only division of our domain without the benefit of navigation. In all the districts, however, water courses abound, which afford remarkably eligible sites for mills. The rocks cross the streams nearly at right angles, and hence form a series of natural dams across their beds, and make falls that vary from five to eighty feet in comparatively short distances. In perhaps no equal extent of territory are there so many advantages of this sort presented.

In connection with this subject it is proper to add, that the metropolis of the State is only seven miles from the ocean; that its harbor is spacious, well protected from storms and at all times accessible.

8. Surprising to many as may be the declaration, South Carolina, in reference to her whole population, is a very healthy country, and by no means a sickly one with regard to her white inhabitants. If the alluvial region, and a few of the middle districts are subject to fevers in summer, the whole State in winter is comparatively exempt from the diseases to which more northern climes are peculiarly liable. The assertion, too, is with entire confidence made, that, even during the hot months, in perhaps one-half of her limits, foreigners may reside not only with impunity, but with renovated constitutions. In the neighborhood of every locality in which mephitic exhalations show the fatality of their power, there are sites for settlements where vigorous health, under the ordinary safeguards, is always secured. The entire sand-hill country and pine lands generally, as well as our towns and villages, furnish the most signal evidence of the salubrity of their atmospheric influence. It may here be appropriately observed that, while from causes, several of which are among the arcana of nature, the lower division is becoming gradually but steadily healthier, a portion of the middle zone is decidedly more liable to maladies of a fatal character. If a better system of drainage and other improvements in the cultivation of the ground, do not satisfactorily account for the one, certain agricultural practices are perhaps sufficient to explain the other. For the diseases which occasionally clothe in the habiliments of mourning the people of Abbeville, Union, Chester and York, it is supposed that the planters of those districts are competent to the diminution of the sources whence they spring. It is not unworthy of special remark, that the atmosphere of the swamps and marshes so poisonous to the white man, is at all times innocuous to

his slave. If it were not for this merciful provision of an all-wise Being, the alluvial region of South Carolina, in the immediate vicinity of its water courses, would soon become a dreary waste, and tenanted only by the beasts of the forest.

Of the cities of the Union, Charleston, and, it may be added, Columbia, show a lower mortality among their *acclimated* inhabitants than any others. With regard to the former, the number of deaths from all fevers (the endemic of the State), except from yellow fever, for the last 18 years, is 656, and in any one year 81, in a population of between 30 and 40,000. From yellow fever, which has prevailed as an epidemic but twice in twenty-two years, for the same period, the aggregate number of deaths is 646. The average mortality for the last six years, all classes included, is 1 in 51; blacks* alone, 1 in 44; whites alone, 1 in 58.†

9. The natural means of resuscitating the soil are abundant and widely diffused. A large portion of the lower country show exhaustless beds of the richest marl. Limestone, though obtainable only in York, Spartanburg, Laurens and Pickens, exists in such quantity in the first two districts, that, by railway communications, the entire primitive region will, at no distant day, be furnished with this earth, so essential to the nutrition and development of plants. While the sea shore parishes possess unfailing supplies of salt mud, salt grass, and shell lime, two-thirds of the State are most amply furnished with swamp mud and peat.

10. Of minerals and the primitive rocks, the number of the former is 28; of the latter, 9.

11. The botany of the State consists of about 3,000 species of plants. Of these, 2,000 are flowering, and 1,000 unprovided with flowers as parts of their organs of fructification. In relation to the former, about 65 are naturalized; that is, *foreign* plants introduced and now growing *wild*. There are about 150 grasses, of which 15 are natives; 30 species of esculent (for man), of which 3 or 4 are naturalized; and about 70 more used in medicine, agriculture and the arts, of which five or six are naturalized.

12. As a member of the Union, South Carolina in population occupies the eleventh rank; in territorial extent, the twenty-second; in the value of her *agricultural* exports, the fifth; in the value of the goods,

* "In Charleston," says the Commercial Review of May, 1847, "the mortality, under 5 years, is 31 per cent.; in Boston it is 46. There are more deaths in Philadelphia from all fevers, including typhus and malarial, than from all fevers in Charleston, including yellow fever. From 1820 to 1830, in Philadelphia, the deaths from fevers were thirteen and five-tenths per cent. on all the deaths. In Charleston, for the last eighteen years, including two epidemics, the average mortality from fevers was eleven and four-tenths; leaving out yellow fever, which attacks almost exclusively strangers, the mortality from other fevers will not be found to exceed seven per cent.

† It appears from tables furnished a writer in the Commercial Review, by Dr. G. Emerson, that the average mortality in Philadelphia, among the *colored* population from 1821 to 1840, inclusive, was one in twenty-six; in Charleston, we know that for that time it was one in forty-four. In Boston the average mortality, it is said (see writer in Boston Medical and Surgical Journal, November, 1842), is one in fifteen. Why, in reference to the colored population, have vital statistics ceased to be published at the North? Let the abolitionists answer.

wares and merchandise of the growth, produce and manufacture of the United States,* the thirteenth.

The very large contribution of this State to the national wealth, which is determined by the amount and value of her domestic exports, and not her imports,† comes, too, from a limited part of her soil. The estimated number of acres in cultivation in 1820, was 1,221,000; at present it does not exceed 2,000,000, or about $\frac{1}{10}$ of her *arable* lands.

13. Taking the census of 1840 as a basis of calculation, South Carolina produces *communibus annis*:

Cotton,.....	61,710,274 lbs.	Wool.....*	299,170
Rice,.....	60,590,861	Tons of hay,.....	24,618
Sugar,.....	30,000	Potatoes.....	2,698,313
Wheat,.....	968,354	Silk cocoons,.....	2,080
Oats,.....	1,486,208	Barley, buckwheat, hops and wax,	19,989
Indian Corn,.....	14,722,805	Value of lumber produce,.....	\$537,684
Rye,.....	44,738	Barrels of tar, pitch, turpentine and	
Tobacco,	51,519	resin,.....	735

If we divide their income, about \$31,000,000, by the whole population, 594,398, the share of each is \$52; of the white population alone, \$119. Of rice, wheat and potatoes, the quantity per head is 108 lbs.; if one-half the amount of Indian corn be added, the quantity of bread food per head, omitting inferior productions, is 120 lbs. Of cotton and wool, the share to each inhabitant is 104 lbs. If the white population be divided into families of 4 (64,777), there will be of horses and mules, 2 to each; of neat cattle, $8\frac{1}{2}$; of sheep, $3\frac{1}{2}$, and of swine, $13\frac{1}{2}$. In reference to the whole population, the proportion of each, in neat cattle, sheep and hogs, is about $2\frac{1}{2}$. Supposing three-fourths of the white families (48,582) to be engaged in agriculture, and that 2,000,000 of acres are in cultivation, each family tills 41 acres, and realizes \$476, or \$11.60 an acre.

* *Exported from Charleston in*

1820.....	\$8,690,539	1829.....	\$8,134,676	1838.....	\$11,017,391
1821.....	6,867,515	1830.....	7,580,821	1839.....	10,318,822
1822.....	7,136,366	1831.....	6,528,605	1840.....	8,990,048
1823.....	6,671,998	1832.....	7,685,833	1841.....	8,598,257
1824.....	7,833,713	1833.....	8,337,512	1842.....	8,091,542
1825.....	10,876,475	1834.....	11,119,565	1843.....	7,010,631
1826.....	7,468,966	1835.....	11,224,298	1844.....	8,578,515
1827.....	8,189,496	1836.....	13,482,757	1845.....	8,366,250
1828.....	6,508,570	1837.....	11,138,992	1846.....	8,284,405
				1847.....	7,783,038

The value of the exports from 1840 to 1847, inclusive, has been furnished by the Hon. W. J. Grayson; the information for the previous years is extracted from De Bow's Commercial Review.

† *Duties received in Charleston for the Years*

1834....	\$467,000	1842....	\$300,000
1835....	464,000	1843....	340,000
1836....	701,000—Year of speculation and	1844....	490,000
1837....	474,000 high prices.	1845....	390,000
1838....	590,000	1846....	280,000
1839....	640,000—Year of high prices.	1847....	387,000

The years 1840 and 1841, remarks the Hon. W. J. Grayson (Collector), are omitted, the record in the office being incomplete. The first and second quarters of 1840 amounted to \$192,000, and the last quarter of 1841 to \$116,000

ART. VII.—PRODUCTION OF BREADSTUFFS.

REPORT ON THE BREADSTUFFS OF THE UNITED STATES, MADE TO GOVERNMENT BY PROFESSOR LEWIS C. BECK.*

AGRICULTURE, commerce and the arts, constitute the chief business of the industrious portion of our race, and it is to the physical peculiarities of a country that we are chiefly to refer the predominance of one or other of these pursuits. Thus, England, with her vast mineral wealth, and her dense population, must almost of necessity be a manufacturing nation; and although she is also noted for her extended commerce, and her improved agriculture, the great attention which she has paid to the latter, may, perhaps, be fairly ascribed to those peculiar views concerning the interchange between nations which have heretofore prevailed. The rich and valuable mines of the central portions of the continent of Europe, and the numerous arts which can flourish only in their immediate vicinity, must ever give occupation to a large portion of their inhabitants. Comparatively few commercial advantages are enjoyed by them, and the produce of their agriculture seldom rises above the amount which is necessary for the supply of their own immediate wants. In all these countries, therefore, the failure of a single crop is the cause of serious apprehension, and in some of them, as in Austria, although a large proportion of the population is engaged in agriculture, there is need of a yearly importation of breadstuffs. This has been ascribed to a defective mode of tillage; but I am inclined to believe that it arises in part at least, if not entirely, from the high price of the land. It is the large returns which the farmer must extort from the soil in order to meet the interest of the heavy investment which discourages him in his efforts, and which at length has the effect of diminishing the amount of the agricultural products. All the appliances of science and art may be called into requisition to increase the yield of the soil, but every improvement of this kind only serves to increase the price of the land and the amount of rent which must be raised from it. When we look at the contrast which the United States present in this respect, we need not wonder, that while travelers speak in raptures of the agriculture of France and Belgium, Germany and England, the famished population of some of those countries has been fed by the surplus produce of a comparatively rude mode of tillage.

During the year 1847, breadstuffs to the value of \$43,000,000, were exported from this country to Great Britain and Ireland alone. The vast agricultural resources of the United States were then for the first time duly appreciated. Notwithstanding the quantity exported during the present year bears no proportion to that of the preceding one, there can be little doubt that our country is destined to be the *granary of the world*. We cannot boast of those mineral riches which are found else-

* The Patent office has given occasion to no more valuable paper than this. We hope the government will continue its investigations upon all our other staple crops—corn, potatoes, rice, cotton, sugar, tobacco, hemp. Nothing would be more valuable than an analysis of our sugar and cotton lands—though the States themselves might look to this matter. Hereafter, we shall make use of the various analyses of Prof. Beck for the information of our readers.

where; still, deposits of iron ore and coal, those most valuable products, exist here in great abundance. But our chief treasure is the soil, and the immense extent of our republic, and the liberal policy which has been pursued in regard to the disposition of its lands, places it in the power of almost every inhabitant to become the owner of a domain, which in Europe could be possessed only by the favored few.

It is a common mistake that land which is in the highest state of cultivation, and yields the largest crops, is necessarily the most valuable. It is stated by Boussingault, that a field in the neighborhood of Pampeluna, where the rent of land is extremely low, gave a profitable crop of wheat, although the yield was not more than from six and a half to seven and a half bushels per acre. "An English farmer," says Washington, in a letter addressed to Arthur Young, "must have a very indifferent opinion of our soil when he hears that with us an acre produces no more than eight or ten bushels of wheat, but he must not forget that in all countries where land is cheap and labor is dear, the people prefer cultivating much to cultivating well."

It is this very extent of our country, and the cheapness of the land, which now, as at the date of the letter of Washington, contribute to render our comparatively rude culture the most profitable in the world. Thus, while the average of the produce of wheat in the United States is not probably above 15 or 16 bushels to the acre, that in Germany is more than 25 bushels; in England 25 or 26; and in France, 24. Still, as has been already stated, the amount of breadstuffs raised here, far exceeds that produced in either of the countries above named. And the same consideration, viz: cheapness of land, together with the rapid and cheap rate at which, by machinery, the crop is harvested and made ready for the miller, must give to the Western States and Territories great advantages for the cultivation of the cereal grain.*

As there is no probability that, for many years to come, our population will be over-crowded, and the price of good cultivable land be much increased, it is easy to see what must become the leading occupation of the multitude who will here seek refuge from the poverty and oppression of other countries. The truth of this proposition will probably be quite apparent to those whose attention has been directed to the subject. But a large number of our citizens have no just idea of the agricultural resources of the United States. One object of this report, therefore, is to spread out the facts, and to give them the widest publicity; to show, indeed, that while commerce and the arts must give employment to a great number of persons, our great business is agriculture; and that the true interests of the country will be promoted by giving to this pursuit all necessary encouragement.

* Mr. O'Reilly stated at one of the meetings of the New York State Agricultural Society, during the winter of 1844, that the product of the wheat lands, between Seneca lake and the Niagara river, had not, for the preceding three or four years, exceeded the low average of eleven or twelve bushels per acre. The land in western New York generally bears a high price, and the problem to be solved is, whether, by a more efficient system of agriculture, the average yield can be so much increased as to afford a return for the investment. What will be the result may be inferred from the well known fact that a large proportion of the wheat flour, with the "Genesee and Oswego" brands, is obtained from wheat grown in the far western States.

I have said that our mode of culture is still comparatively rude. It was quaintly remarked to a traveler by the gardener of Drummond castle, that "if science once gets into the farmer's ground it penetrates into the very heart of a nation." This is perhaps true;* but it must be confessed that, thus far, the influence of science upon agriculture has been very trifling when compared with the vast improvements which it has effected in the arts. The difference proceeds principally from two causes assigned by Count Chaptal: "The first is, that the greater part of the phenomena offered to us by agriculture, are the effects of the laws of vitality which govern the functions of plants, and these laws are still in a great measure unknown to us; while in the arts which are exercised upon rude and inorganic matter, all is regulated, all is produced, by the action either of physical laws only, or of simple affinity, which are known to us. The second cause is, that, in order to apply the physical sciences to agriculture, it is necessary to study their operations profoundly, not only in the closet but in the field." It will not, therefore, appear surprising that the researches which have been made in regard to plants have often assumed a wrong direction, and have not led to those important results which were promised upon the one side and expected upon the other. Thus, most of the analyses of the proximate principles of plants, not having been made upon such as are in a perfectly pure state, are to be considered only as approximations of the truth. The same remark will, in a great measure, apply to the numerous determinations of the quality and quantity of the ash obtained by the combustion of the grains used as breadstuffs. "The grain is an assemblage of various distinct parts, differing from one another in composition, and varying also very much in their relative proportions. So, also, the dried stem of a plant, the entire straw of a cereal grass, may be burned in like manner. But this, too, is an assemblage of many parts. The exterior less vascular portion, the interior full of vessels, the fluids which circulate through them, all contain their peculiar inorganic substances, and all vary almost endlessly in their relative proportions."†

Similar objections might be urged against the analyses of soils, which have been so vigorously prosecuted by many chemists. That the facts which have thus accumulated may have some value, is not to be doubt-

* I say "perhaps," because in agriculture, as in all well conducted enterprises, every thing depends upon a comparison of an estimate of the expenses with an estimate of the profits which accrue from them. Paradoxical as it may seem, it is nevertheless true, as stated by Chaptal, that a farmer may be ruined by a good harvest. When science, therefore, suggests a lavish expenditure simply for the sake of insuring a large yield per acre, she does a positive injury. The end of those who follow at random all the innovations proposed, is invariably disastrous.

† The above remarks are from Prof. J. F. W. Johnston's advertisement to the English translation of Mulder's chemistry, Part III. Prof. Johnston has himself been largely engaged in the kind of researches which he now characterizes as indeed possessing some agricultural value, but which must be entirely dismissed by the exact physiologist. To set this matter in a still stronger light, he adds the following: "An amusing English chemist lately dried and burned an entire mouse, and, from the results of his combustion, drew grave results in regard to points which lie at the very confines of our existing knowledge. He might as well have put a whole man in his crucible or his combustion tube, and reasoned upon the nature of the ash, or the proportion of the gasses he had collected."

ed; but they must after all be considered as only introductory to researches conducted with a more just appreciation of their true influence upon the improvement of agriculture. It is to be feared that in many cases these almost useless labors have been suggested by the crude and hasty generalizations, which, unfortunately, within a few years past, have too often usurped the place of patient inquiry. A recent writer has well observed, that "of the classes which have been thus led away, there has been none which has been so far misguided as the sober one of the farmer. It is to him that the vegetable quack appeals, offering, in the application of chemical manures, electricity, magnetism, and other agents, harvests more golden than the world had ever seen before."

I trust it will not be inferred from any of the remarks which I have made, that I undervalue the importance of physical science in the improvement of agriculture. On the contrary, I doubt not that, with a right appreciation of its objects and a true direction of its labors, it is destined to contribute greatly to increasing the productiveness of the soil. But such results cannot be immediately realized. "Years of experiment must pass by, numerous failures must be experienced, before the real advantages of scientific farming will be evident." It is sincerely to be hoped that the false expectations which have been from time to time held out by visionary men, may not have the effect of exciting in the minds of agriculturists a prejudice against all the improvements which may hereafter be proposed.

The chief breadstuffs of the United States are wheat, rye, maize, and buckwheat. Of these, the first is by far the most important, and it is to its history, culture, and chemical examination, that particular attention is now to be directed.

WHEAT.—Wheat is the principal breadstuff of the United States and of most European nations. This, as well as the other cereal grasses, has probably come to us from the east; but it has been so much changed and improved by culture, that its connection cannot be satisfactorily traced to any species of the genus now known to be growing wild. Of all the cereals, it is that which requires most heat, and its culture first begins to be of importance below 60° North latitude in Europe, and considerably below that line on our continent. From the meteorological observations which have been made, we infer that a mean heat of at least 39° Fahrenheit is necessary for the growth of wheat, and that during three or four months. The mean summer heat must rise above 55 Fahrenheit. It does not, however, bear tropical heat well. In countries within the tropics it first occurs at altitudes which in climate correspond with the sub-tropical and temperate zones.*

There is a fact stated by the author just quoted, which exhibits in a striking manner the advantages our country must possess for raising and transporting the produce of this important cereal. It is, that although wheat is very productive and of excellent quality in Chili and the republic of Rio de la Plata, and immense quantities are sent to Peru and even around Cape Horn to Rio Janeiro, yet North American flour is sold at the market of Valparaiso, and the bakers are obliged to buy it, as it is cheaper than the flour made in the country, because there are no roads

* Meyen's Outlines of the Geography of Plants.

in the interior, and wages are exceedingly high from want of sufficient hands.

There are few parts of the United States in which wheat may not be raised. But the productiveness of the crop is influenced by various circumstances, as soil, climate and expense of transport to the great commercial depots. These and the more profitable cultivation of other articles, as tobacco, rice, cotton and the sugar cane, have nearly fixed the southern limit of the wheat growing region of the United States in North Carolina.* The particular districts, however, in which the culture of the cereal is most successfully prosecuted, are the western parts of New York and Pennsylvania, Ohio and the north-western States and Territories. The rich and virgin soil of the western prairies seems to be peculiarly adapted to the growth of wheat; and the great lines of communication which are already established between these and the Atlantic cities, afford every facility for the transport of the surplus produce.

It has been already remarked that the profits of the culture of this cereal do not depend upon the yield per acre, but upon the cheapness of the land and the economy practiced in its management. The want of precise information upon these cardinal points, renders the statements which have been made in regard to the productiveness of wheat in various parts of the world of little practical value. Thus, when we are told by Meyen that in Prussia the average produce of wheat is not more than five or six fold of the seed; that in Hungary and Croatia it is from eight to ten fold; and that in some parts of Mexico the produce in favorable years is from twenty-four to thirty-five fold, the information is of no use to the farmer, because the relative expenses of the culture and the value of the crop are not stated.

Notwithstanding what has been said concerning the profitable culture of wheat, in large portions of the United States, and the probability that the great West will hereafter furnish the principal supply for export, we should by no means overlook those causes which exert an influence upon the productiveness and quality of this grain. It has been ascertained without doubt that the real value of wheat and of the other cereals and breadstuffs, depends mainly upon the proportion of gluten and albumen which they contain—their starch, glucose and dextrine or gum, not being considered nutritive. It appears, also, that wheat exceeds all the other cereals in the quantity of nutritive matter which it yields. Another advantage which it possesses is, that it furnishes also a greater quantity of flour; for fourteen pounds of wheat yield thirteen pounds of flour, while fourteen pounds of oats yield only eight pounds, and an equal quantity of barley but twelve pounds.†

That wheat is peculiarly sensible to the effects of soil and climate appears to be a well established fact. It is stated that even in different parts of England the crops and their produce are very various. The Sicilian and southern wheat generally contains a larger proportion of gluten than that from more northern countries. This, no doubt, arises from its more rapid growth, its harder and tougher grain, and its less

* Mr. J. B. O'Neill, in an address before the Agricultural Society of South Carolina, estimates the value of the flour imported into that State at \$260,000, of corn \$150,000, of oats, peas and hay, \$585,000.

† Burnett's Outlines of Botany.

proportion of moisture. Hence, also, it keeps better, and commands a higher price in market, especially when required for exportation. I have reason to believe, however, that the superiority of southern wheat has usually been over-estimated, and that the proof almost always adduced of its containing more gluten than that from the north, viz., its employment in the manufacture of macaroni and vermicelli, is by no means conclusive.*

One of the most important points connected with the subject of wheat and wheat flour, is the proportion of water or moisture which they contain. We have the high authority of Boussingault for the statement that, in France, "it is undoubtedly in consequence of the large quantity of water which the northern wheats contain, that we meet with such indifferent success when we attempt to keep them for any length of time in our granaries. The wheat of Alsace, for example, frequently contains 16 to 20 per cent. of moisture; and I have ascertained, by various experiments, that it is almost impossible to keep it without change in vessels hermetically sealed. To secure its keeping, the proportion of water must be reduced to from 8 to 10 per cent., and this is nearly the quantity of moisture contained in the hard and horny wheat of warm countries.†

In five analyses of London flours, by Mr. J. Mitchell, the proportion of water varies from 14.10 to 17.40 per cent.‡

The proportions of water in the above samples, range much higher than those given in the analysis of various flours performed by Vauquelin, which are from 8 to 12 per cent. They are also higher than those in the United States flours—the range of moisture being in the samples which I have analyzed from 12 to 14 per cent.

This difference in the proportion of water, which seems to be a matter of so much consequence, is undoubtedly, in part, due to the difference in the climate of the region in which the wheat is grown. This, indeed, is so well understood to be true, that the amount of bread obtained from different kinds of wheat flour is referred to the same cause. Thus, "it has been shown, by a comparative experiment tried some years ago upon Scotch and English wheat, of apparently equal quality, that a quarter of the latter, though yielding rather less flour, yet, when made into bread gave 13 lbs. more than the former. This is accounted for by the greater strength of sunshine, under the climate of England, having an effect upon the grain when ripening, which occasions the flour to absorb more water in the formation of dough."§

* According to the analysis of Professor Johnston, the fine flour of the celebrated Amalfi, or macaroni wheat, brought from Italy by Colonel Hamilton, contains, in 100 parts, 13.30 of water and 11.62 of protein compounds (chiefly gluten). This is not above the average of the proportion of gluten contained even in our New York and western flours. Mr. Walter, in his "Letters from the Continent," describes the process for fabricating macaroni, which is very simple, and adds: "It is my firm belief that if any spirited individual would commence its manufacture (in England), on an extensive scale, the Italian macaroni would soon cease to be an article of importation."—(*London Quarterly Journal of Agriculture*, vol. II., p. 462.) I have no doubt that this manufacture might be successfully carried on in various parts of the United States, especially if some care was used in the selection of those kinds of flour which are known to be rich in gluten. *

† Rural Economy.

‡ Treatise on the Falsification of Food, &c.

§ Penny Magazine, vol. 75.

From experiments which seem to be trustworthy, it appears that the Alabama and the southern wheat flours, generally, yield more bread than the northern or western. The gain in favor of the Alabama, as compared with the Cincinnati, is said to be 20 per cent. It is also stated, by one of the most extensive London bakers, that American flour will absorb 8 or 10 per cent. more of its own weight of water in manufacturing it into bread or biscuit than the English wheat. The English wheat of the same variety with the American is invariably a larger and plumper berry. This is attributed to the longer time required for ripening in that comparatively cooler and damper climate. The American, on the contrary, in ripening under a hot sun, evaporates a larger proportion of water, and leaves the farina in a more condensed state, and when exposed again to moisture in cooling, it absorbs the additional quantity above stated. This is an important fact of which the dealer and consumer should be fully aware.*

No apology is necessary for the details which will be presented concerning the effect of water or moisture upon this cereal, as it is a subject worthy of the most serious consideration. Although, as has been observed, the proportion of water in the wheat and wheat flour of the United States is generally less than in those of England, France and the North of Europe, it is often in sufficient quantity to cause great losses, especially when shipped to tropical countries. So early as the year 1814, attention was directed to this in a valuable series of papers published by Mr. Jonas Humbert, of New York,† a large dealer in flour, and at one time a deputy inspector of that article. He states, that since the Revolution, the price of the New York wheat flour in the markets of Europe and the West Indies had been gradually falling below that of Pennsylvania and Virginia. He asserts, as the result of his own experiments, that the New York flour is equal to that obtained from wheat raised in any other State or country; and he attributes the deterioration in the price of the former to carelessness on the part of those who are engaged in its preparation and shipment. Among the points which he enumerates are, a want of attention to the ventilation and proper drying of the grain before it is ground, the rapid and improper mode of grinding, regrinding the middlings, and mixing therewith the portion first ground,‡ and also the still more objectionable practice, perhaps still followed, of mixing old and spoiled flour with newly ground wheat.

It is stated, that in Poland, where the ventilation and drying are continued for some time, wheat has been preserved sound and good for half a century; its age never does it injury, and such wheat is said to yield handsomer and better flour than that obtained from the grain more

* From an article in the Toronto (Canada) Herald.

† Transactions of the Society for the Promotion of Useful Arts, in the State of New York, vols. III and IV.

‡ Mr. Humbert objects to the mixing of the produce of the first and second grinding, and putting up the whole for superior flour. "To the eye," he says, "this mass appears very fine; but when mixed with water it is very deficient in elasticity, and on being worked with the hand, is similar to clay mixed with water." The mode of management here spoken of is no doubt resorted to from improper motives; but whatever may be the difficulties in working such a mixture, it so happens that it contains more nutritive matter than the fine flour alone. But of this more hereafter.

recently harvested.* In Dantzic, the preparation for keeping wheat continues for a year and sometimes longer; after this period it is often kept for seven years perfectly sound in the large granaries of that place, although surrounded by the sea.

In regard to American wheat and wheat flour, it may be remarked, that the proportion of water naturally existing in them is often increased by carelessness in harvesting the grain, and in its transport and storage. In one sample of Indiana wheat flour recently analyzed, which was sour, and had but little more than one-half the usual quantity of gluten, the injury was probably caused by the hurried mode of packing, for the changes above noticed occurred before the opening of summer. Sometimes, however, our flour is spoiled by being stored in damp, warm, and ill ventilated warehouses. The books of one inspector of the city of New York, shows, that in 1847, he inspected 218,679 barrels of sour and musty flour. He certifies that in this amount he is of opinion that there was a loss sustained of \$250,000.† But as no flour that is known to be sour or bad is inspected, this statement gives a very imperfect idea of the loss incurred, even in that city. The total amount of loss for the whole United States arising from chemical changes in breadstuffs by internal moisture, has been estimated at from \$3,000,000 to \$5,000,000.

Some remarks upon this subject, recently published‡ by Mr. Brondgeest, of Hamilton, Canada West, deserve to be here introduced. This gentleman has paid much attention to the preservation of food, both as a merchant and as president of the board of trade of Montreal and of Hamilton. He notices an article on the "Preservation of Food," in the January number of the *Westminster*, the author of which proposes the exclusion of air, by an air pump or otherwise, as a remedy for the injuries sustained by breadstuffs, and very justly observes that these extreme measures are wholly unnecessary, as arrangements perfectly feasible will answer the purpose. He admits the necessity of something being done, as "the present system is wasteful, and contrary in many respects to common sense; the warehousing of grain is defective in every point of view. The common mode of shipping wheat, or other grain in bulk, is the cause of injury with American grain, and I doubt not also with the European. The emptying of grain loose into barges not over dry;§ spray and moisture on the voyage to the shipping port;

* It will be seen, however, that the flour from the samples of Poland wheat which I have analyzed, yielded comparatively small proportions of gluten. All the samples were in excellent condition, and seemed to have sustained no injury by shipment. But from some experiments which I have made, I am induced to believe that wheat which has been long kept may suffer a diminution in the amount of gluten without presenting any external evidence of the change which has taken place. Wheat flour, when carefully managed in the mode hereafter to be described, retains its nutritive matter in a more stable form. If this view is correct, it should have some influence in determining the best mode of keeping breadstuffs for future use or for shipment.

† Observations on the Production, Manufacture and Preservation of the Cereal Grains; by J. R. Stafford.

‡ *Westminster Review*, for October, 1848.

§ A gentleman residing in the city of Albany, N. Y., informed me that during the past season he witnessed an operation which, if generally performed, will sufficiently account for all the losses sustained in the shipment of the cereal grains. Several persons were engaged in transferring wheat from a canal boat to a river barge; and, while this was going on, it was the business of one of them to sprinkle

exposure to weather while being shipped; damp lining boards; damp vessels; damp during the voyage, and then again being exposed in a lighter and put away in a damp warehouse, or in a low situation on the bank of a river—all tend to the destruction even of the finest particles of grain."

As remedies for all these injurious influences, Mr. Brondgeest proposes the shipment of grain in barrels like flour, and the proper kiln-drying of such varieties as are known not to keep well. The souring of flour, either on the river or sea voyage, or after warehousing, he adds, "can be perfectly prevented by the use of the kiln, either to the flour, or the wheat, prior to grinding; one-third to one-fifth of the wheat being highly dried makes the whole keep perfectly for years, and that third or fifth may be of the cheap spring grain, making much stronger and better flour; but which if not kiln-dried would sour the whole."

In the report of the Commissioner of Patents, dated March, 1844, there are some statements of interest in regard to kiln-dried flour and meal. From these it appears that Ohio flour, after having been subjected to the drying process, was kept in the southern and South American ports in good merchantable order, and in weather in which other flour, not thus prepared, invariably spoiled. The process of drying, here noticed, was conducted by the employment of hot air; and Mr. Gill, who claims the invention, states, that eighteen pounds of water are thus expelled from a barrel of flour.

There can be no doubt, therefore, that the removal of a portion of the water which wheat flour and maize meal naturally contain, is the easiest and best means of preserving them. But the drying process, simple as it may seem, requires to be carried on with great care. The passage of the grain or flour, however rapidly, over highly heated surfaces is apt to scorch, and thus give them an unpleasant flavor. From the rapid evolution of the moisture in the form of steam by the heat thus applied, unless proper ventilation be also secured, further injury will probably result. The steam again condensing into water upon the cooling of the flour, may accumulate in particular parts of the mass operated on, and thus, perhaps, render it at least equally as liable to injury as it would have been without the employment of this process.

Another fact which I have observed in those samples of wheat flour that have been exposed to a degree of heat high enough to expel all the water is, that the gluten is less tough and elastic—a proof that its quality has been impaired. It is probable that the proportions of dextrine and glucose may thus also be increased at the expense of the starch. Under these circumstances, a subsequent exposure to moisture and a slight elevation of temperature, establishes the lactic acid fermentation, which, I suppose, is the chief cause of the *souring* of flour.

The advantages to be derived from artificial drying, are more fully attained by the invention patented by Mr. J. R. Stafford, in 1847, than by any other plan with which I am acquainted. It is based upon the

the grain quite freely with water, containing in solution a portion of common salt. As soon as one pail-full was exhausted, another was prepared; and the effusion was continued until the work was completed. The addition of the salt to the water was a mere cover for a really fraudulent and most reprehensible operation.

process for drying organic bodies usually adopted in the laboratory. The grain or flour is brought into contact with a surface of metal heated by steam, and a due degree of ventilation, so important to the completion of the drying, is secured. As the heat is not raised above that of boiling water, there is no danger of injuring the quality, color or flavor, of the substances subjected to its action. The heat is, moreover, uniform, and the expense is said to be less than that of the mode of drying heretofore generally adopted. By Mr. Stafford's apparatus 16 or 17 pounds of water are expelled from each barrel of flour; this reduces the proportion of water to four or five per cent., an amount too small to be productive of injury. Absolute dryness cannot be easily attained except by a long exposure of the flour to the heat, and it is not required for its preservation; a reduction of the amount of water to the small per centage just stated, has been found to be amply sufficient to secure this object. I cannot, in my opinion, render a more important service to dealers in breadstuffs, than to recommend strongly the employment of this or a similar process of drying.

After the proper ventilation and drying of the grain has been effected, there is still another point deserving of some consideration. This is the absorptive power of the different kinds of flour, which I have found by experiment to be subject to considerable variation. The amount of moisture absorbed by the various samples which have been tried, after having been brought to a state of absolute dryness, ranges from 8 to 11.65 per cent. by an exposure to the air of a room, for from 18 to 24 hours. This difference in the hygrometric character of flours, must, I think, have an influence upon their preservation, and will perhaps account for the fact, that with the same degree of carelessness and the same exposure, some kinds are more liable to spoil than others. The remedies for all the difficulties to be apprehended from this source, are the employment of tight barrels, and the avoidance of all unnecessary exposure of their contents to the air.

Some remarks may be added more definitely to explain the various modes in which wheat flour, especially, is injured by the presence of an undue proportion of water under the influence of a warm climate. The general result is a diminution in the quantity of gluten, or such a change in its quality as renders it unfit to produce good panification. It sometimes also favors the formation of sporules of different kinds of mushrooms which are afterward developed in the bread.

Dumas states that the wheat of 1841, exhibited in 1842, during a very warm summer, this defect in a very great degree. When these mushrooms were developed, the temperature was much elevated, and the bread soon disappeared, leaving only a reddish and disgusting mass.

The number of sporules was much diminished by the thorough washing of the infected grain, followed by prompt desiccation. By reducing the proportion of water, increasing the dose of salt, and finally by raising the temperature of the oven, the development was in a measure prevented.*

A few years since, I observed reddish sporules similar to those above noticed in a sample of New Jersey flour. The change took place in

* Dumas, *Chimie Appliquée aux Arts*.

twenty-four hours after it had been made into a paste with water. On repeating the experiment, the same result followed.

According to Dumas, moisture and heat, which often cause such changes in the most important constituent of wheat flour, produce very little effect upon the starch which it contains. Although it is with some hesitation that I dissent from such high authority, the following facts appear to me to show that this idea is an incorrect one:

Starch is known to be composed of particles which are insoluble in cold water, but when exposed to a heat of 180° F., the pellicle of the grain bursts, and the contents are liberated. In a state of solution, it is quickly converted into dextrine and glucose, or grape sugar, by the addition of a small quantity of diastase.* If this mixture be kept in a warm place for a few days, it acquires a new property, viz: that of converting the glucose into lactic acid. This is denominated the *lactic acid fermentation*; and, as I have before suggested, it is probably one of the causes of the *souring* of flour when exposed to high summer heats in its ordinary moist condition. Hence, it will be found that, while in sour flour the quantity of gluten is usually diminished, or its quality injured, the proportions of glucose and dextrine are also, in many cases, increased at the expense of the starch—a change which precedes the development of the lactic fluid.

One of the best modes of determining the real value of wheat and other flours, is to examine the bread made from them. The process of panification brings out all their defects, and as the researches upon breadstuffs are conducted chiefly with the view of ascertaining their suitability for the manufacture of bread, it affords a good standard of comparison for the various samples subjected to experiment. It should be remembered, however, that bread is sometimes adulterated for the very purpose of enabling those who are engaged in its fabrication to use the poorer kinds of flour. Thus, Dumas states that in Belgium and the north of France, sulphate of copper (blue vitriol) has long been introduced into the manufacture of bread. By the employment of this salt, the bakers can use flour of middling and mixed quality; less labor is required in its preparation, the panification is more speedy, and by its addition a larger quantity of water is taken up.†

The use of alum in the fabrication of bread seems to have been practiced from a remote period. This, it is said, also secures to the baker the advantage of employing inferior kinds of wheat flour, and even of mixing with the farina of beans and peas, without apparently injuring the quality of the bread.

The alkaline carbonates, the carbonate of magnesia, chalk, pipe clay, and plaster of Paris, have all been used, either to correct the acidity of damaged flour, to preserve the moisture, or to increase the weight and whiteness of the bread. But it need scarcely to be observed that all these substances, with perhaps the exception of small additions of the alkaline carbonates, must render the bread unwholesome. Fortunately, however, the presence of most of them can be quite easily detected.

Other frauds which have been resorted to, are more difficult of detec-

* This is a peculiar nitrogenous principle which exists in the grain of the cereals after germination commences.

† *Traité de Chimie Appliquée aux Arts*, vol. VI., p. 429.

tion; but these are, happily, less prejudicial to health, although not always perfectly harmless. Among these may be mentioned the adulteration of wheat flour with potato starch, the flour of leguminous plants, buckwheat, rice, linseed, &c. Mareska, in a recent paper, states that he has had occasion to examine several samples in which these frauds had been practiced, and he describes several processes by which their occurrence may be ascertained.*

According to a statement made by a quartermaster in the United States army, one barrel of flour, or 196 pounds, when in dough, contains about 11 gallons, or 90 pounds of water, 2 gallons of yeast, and 3 pounds of salt; making a mass of 305 pounds, which evaporates in kneading and baking about 40 pounds, leaving in bread about 265 pounds; the bread thus exceeding in weight the flour employed by about 33.50 per cent.

Dumas informs us that 130 pounds of the common white bread of Paris are obtained from 100 pounds of flour. To this he adds, that the flour contains 17 per cent. of water, the produce being then equivalent to 150 pounds of bread from 100 pounds of flour.† As the American wheat flour seldom contains more than 14 per cent. of water, the statement of the quartermaster corresponds very nearly with that of the French chemists. The increase of weight in the bread over that of the flour, viz., 33.50 per cent., ought to afford an ample remuneration for its manufacture. But it is not unfrequently the case that larger demands are made by those who are engaged in this important branch of art.

The deficiency in the weight of bread, and the extent of the imposition practiced in the sale of loaves at a certain price, can, in general, be very easily ascertained. For example, the proper weight of the shilling loaf (New York currency) may be determined by reducing the price of flour to shillings, and then dividing 196 by this amount. Thus, the price of flour being \$7 a barrel (which is a sufficiently high average for even the best brands during the year past), the shilling loaf should weigh three and a half pounds. For $7 \div 8 = 56$; $196 \div 56 = 3.50$. This will leave twenty loaves of the same weight, or \$2 50 as the profit on the manufacture.

Although the whiteness of bread is considered as a mark of its goodness, it has been ascertained by Professor Johnston, that fine flour contains a less proportion of nutritive matter than the whole meal. The correctness of this view has been confirmed during the present investigation; for, in two or three samples of wheat which I have analyzed, it was found that the amount of gluten in the fine flour was less than in the flour passed through a coarser sieve and containing a larger proportion of bran.

These results, according to Professor Johnston, are to be accounted for on the supposition that the part of the grain which is most abundant in starch crushes better and more easily under the millstones than that

* Journal de Pharmacie—quoted in the London Pharmaceutical Journal, for February, 1848, p. 394.

† Boussingault gives the same proportions for the white bread of Paris. But he says, in the country, where the bread is less baked, 100 parts of flour give 140, 145 and 146 of bread.—Rural Economy, p. 173.

which, being richest in gluten, is probably also tougher, and less brittle. They are also consistent with the greater nourishment generally supposed to reside in household bread, made from the flour of the whole grain.* But such is the controlling influence of custom, that it is perhaps in vain to attempt a change, even though its benefits may be clearly proved by the researches of science, and by an extensive experience.

ART. VIII.—THE STATE OF ALABAMA,

HER RESOURCES AND THE PROPORTION OF WEALTH SHE CONTRIBUTES TO THE NATIONAL WELFARE.

NATURAL ADVANTAGES.

OPEN to the Gulf of Mexico on the south boundary, with a spacious bay, over the bar of which ships drawing twenty and three-quarter feet at low tide safely ride, and into which all of her rivers (with two exceptions) flow—the one invites thither ships of the largest class, and the others bear to Mobile, from the fertile valleys and plains above, their valuable productions. Alabama is watered by the following noble rivers:

Names of Rivers.	Navigable, description, &c.	Miles in Alabama	Empties into.
Mobile.....	Largest class steamers.....	60	Mobile bay.
Alabama.....	The same.....	450	Mobile river.
Mombigbee.....	The same.....	540	The same.
Warrior.....	The same.....	150	Tombigbee.
Tennessee.....	do. for 1,000 miles altogether..	130	Ohio river.
Chatahoochee...	The same, eastern boundary.....	200	Apalachicola.
Cooea.....	Large steamers below and small above the falls.....	170	Alabama.
Cahawba.....	For small steamers and flats.....	120	do.
Tallapoosa.....	do.....	40	do.
Noxuba.....	do.....	50	Tombigbee.
Suckernoochee...	do.....	35	do.
Navigation.....		1945	Miles in length.

Such are our great and peculiar advantages of navigation that our citizens will never be compelled to abstract from other investments—they may choose largely of their capital for internal improvements. But there is a railroad now in progress, the Mobile and Ohio, that I may properly regard as associated with the natural advantages of the State. The Gulf of Mexico, sweeping up into this division of the continent, continued northerly by the Bay of Mobile, with the Mississippi river inclining from its mouth north-east, throws this river at the mouth of the Ohio within *four hundred and forty-five miles of Mobile*, the commercial emporium of Alabama. The country between those two points being remarkably level, the route unobstructed by a single mountain or river, or any stream of moment, and running in its whole extent through

* Highland Society Transactions, 1847; and Skinners Farmers' Library, vol. III, pp. 142, 143.

one of great beauty and fertility, and already settled by an active and wealthy population, must throw their great trade and travel through Alabama into Mobile; and in twenty hours or less citizens of Missouri, Ohio, Kentucky or elsewhere, may leave Columbus, in Kentucky, the upper terminus, and arrive at Mobile with their produce in one-fifth the time they could reach New Orleans.

Before I proceed to the other very interesting portions of this branch of the subject, I will here allude to such internal improvements as are already completed or are in active progress:

The Muscle Shoals canal,	complete.....	35½ miles.
Huntsville canal,	do.....	16 "
Tuscumbia and Decatur railroad,	do.....	44 "
Montgomery and West Point, nearly,	do.....	87 "
Cahawba and Marion,	do.....do.....	35 "

Canals and railroads, length.....217½ "

A railroad from Selma, or some other points on the Alabama, to the Tennessee river; one connecting the Tuscumbia and Decatur with the Mobile and Ohio road; and another from Blakely, opposite Mobile, to Columbus, Georgia—each of which would add greatly to the traffic and wealth of the State, and pay good dividends—are perhaps the only ones of importance contemplated.

To continue with natural advantages. From Tuscaloosa, on the Warrior, in the direction of Selma, on the Alabama, are bituminous coal-fields and iron oar, with marble and hard and soft limestone quarries, in rich and inexhaustible profusion, immediately on navigable streams. The lands are covered with splendid forests of white and live oak, cypress, pine, cedar, mulberry, hickory, &c. Water power is unlimited and never-failing. Irrigated by so many streams, as indicated by 1,945 miles of navigation, with the innumerable tributaries thereto, the lands of Alabama are of amazing superiority, as their productions hereinafter noticed will exhibit, and, with a climate temperate and uniform, it is decidedly healthy.

PRODUCTIONS.

To regard alone the ascertained value and extent of the surplus products of Alabama which we ship off, compared with those of other States, omitting an estimate of our own heavy consumption of corn, wheat, hogs, cattle, sheep, timber, cotton consumed in home manufactures, value of negroes raised, and horses and mules raised, which would amount to several millions—confining ourself to the surplus productions, I say we will, I think, do so with some astonishment, as associated with it must be the effort to estimate the vastness of the capital employed to produce it. Her surplus productions are cotton, lumber, staves, turpentine, manufactured cottons, coal, &c.

What is her cotton crop and its value? I will arrive at it in this way, and pardon me for assuring those who read this that I am quite sure I shall not be far from correct. To the amount of cotton received at Mobile I will add the quantity raised in North Alabama, which is forwarded down the Tennessee or hauled overland to Memphis. I will also add the quantity which goes down the Chatahoochee to Apalachicola. Adding these together, I will deduct the quantity raised in the eastern

counties of Mississippi. This will show the crop of Alabama to result as per following table:

Where received and raised.	No. of bales of cotton for years		
	1846-7	1847-8	1848-9
Alabama and Mississippi, at Mobile,	323,462	436,661	530,000
North Alabama to New Orleans, as per census of 1840, 49,225,474 lbs., at 510 lbs. to the bale, is.....	*96,500	*96,500	*96,500
East Alabama shipped to Apalachicola for Chata- houchee,	†50,000	†50,000	†50,000
	469,962	583,161	676,000
Less Eastern Mississippi crop,	†60,000	80,000	80,000
Net crop of Alabama in bales.....	409,962	503,161	596,000

And the following table will show the value of those crops of cotton, at the average price it sold at, of the respective seasons at Mobile for the three years:

Year.	No. bales.	Weight of each.	Total lbs. and average price.	Total value.
1846-7.....	409,962	510 lbs.	209,080,620 104	24,570,972 85
1847-8.....	503,161	510 lbs.	256,612,110 63	17,321,317 42
1848-9.....	596,000	510 lbs.	298,760,000 6	17,956,200 00
	1,509,123		764,452,730	59,848,483 30
Average of three years,	503,041		254,817,577	19,949,494 43

Enormous as this is, yet this great interest of Alabama, as well as the whole South, does not yield so profitable a dividend on the capital invested as other investments elsewhere do.

But, to renew the subject, let us glance at her wealth, and what she has done to promote the national welfare.

1st. Of lands she owns 15,011,520 acres, and, besides what her citizens have paid for Spanish and French grants and school lands, they have paid into the Land Offices of the Government \$17,000,000 for lands in their wild state.

2d. She has paid to Maryland, Delaware, Virginia, &c., enormous sums for the three hundred thousand negroes she owns.

3d. The capital invested in foreign and domestic commerce, city and town property, houses, canals and railroads, manufactures, banking and insurance, iron and coal mining, timber trade, steamboats and shipping, with the increased value of lands by clearing, fencing, &c., value of slaves, live stock, and money hoarded, is* very large in the aggregate amount, an estimate of which I scarcely dare mention.

4th. Her liberality expends in trade with the other States a large portion of her income.

* Allowing for each year only what it was in 1840, as per census.

† This year the Alabama shipments by this river may be some ten to fifteen thousand bags more; but for several years it has been about these figures.

‡ This is as much or more than we received from this river during that season, of Mississippi cotton, as the total receipts out of it were but 122,000 bales; for the other years they are about correct.

5th. The shipping interest is largely benefited by the freighting of her six hundred thousand bales of cotton, and the return cargoes purchased by us.

With such varied and extraordinary advantages for commerce, manufacturing, mining, ship-building, timber-getting, &c., it is not to be wondered at that Alabama is beginning to direct her attention to the advantage of diversifying her pursuits; and, under any circumstances, in time, those vast sources of wealth now reposing within her borders must become transcendently productive. The accumulation of wealth which has been going on, but which has been regularly invested in the purchase of negroes, is now being stayed from that direction, and turned toward other industrial pursuits. It is obvious, however, to every political economist that it is the interest of every interest in the country to promote the value of cotton, as, should there be a violent transition of slave labor to the pursuits above alluded to, and which is entirely practicable, a derangement of trade would ensue which would be prejudicial, to say the least of it, to the interests of other sections of the Confederacy. And when cotton sells well public lands are purchased freely, and the direct interest the government has in this matter will be readily and conveniently demonstrated by the following table, showing the number of acres of land owned by the citizens of Alabama, Mississippi, Louisiana and Arkansas, the amount paid for portions bought of the government, and the number of acres in each remaining unsold:

States,	Total No. of acres in	Acres owned,	Paid to Gov- ernment for portion bought of it.	Acres remain- ing unsold, Jan. 1, 1849.
Alabama,	32,462,080	15,911,520	\$16,888,047	17,450,560
Mississippi,	30,174,080	15,811,650	16,402,691	14,326,430
Louisiana,	29,715,840	6,263,822	4,186,394	23,452,018
Arkansas,	33,406,720	5,942,117	3,769,695	27,464,603
			\$41,246,827	82,693,611

This table shows some extraordinary facts that are not often considered by those who abuse the South, namely, that besides the government owning 82,693,611 acres of land, which would be sooner purchased up if their agricultural productions could be promoted; these States have paid \$41,246,827 for the lands they have alone purchased of the government; and if this sum had been invested at the average time of their payment, say 1835, in six per cent. stocks, payable semi-annually, and such dividends had been reinvested and compounded till now, it would reach a total sum to-day that would equal fully all the bona fide capital of the North invested in cotton factories and shipping. I allude to this to present a cause why the South may appear behind the North in the progress of her factories, &c.

Cotton factories and iron forges are, however, becoming numerous. Coal mining is attracting great attention, and from the great profits arising from investments in ships, and our wonderful facilities for building, with our splendid timber on the spot, &c., it is not unlikely we shall ere long enter the lists as competitors with our northern brethren in this exceedingly profitable branch of their wealth. In Alabama our

citizens are generally exempt from embarrassment, and in certain quarters large amounts of money are known to be hoarded.

The university and colleges, the high schools and academies, in all the principal towns and cities of the State, are in the highest degree flourishing; and the great increase of the number of churches and membership, the decrease of crime and the orderly character of our citizens, manifest the spreading influences there of religion.

The increase of population of Alabama, Mississippi, and Louisiana, is rapid and steady. For example, there were in

	1820.	1830.	1840.
Alabama,.....	127,901	309,527	590,756
Mississippi,.....	75,448	136,621	375,654
Louisiana,.....	153,407	215,529	352,411

And in 1850, a large increase will be found.

In conclusion, I feel the utmost pleasure in announcing to the friends of progress everywhere that, amongst many of those who have violently opposed all measures for encouragement of enterprise and the increase of facilities for the development of our resources more actively and profitably, practical experience has exposed to them their serious errors, and now, in the most cordial manner, the most distinguished as well as many of the masses of their portion of the people, are uniting with the other portion in the most liberal and enlightened disposition to meet the calls of the whole people for the purposes alluded to.

Devoting my remarks to the position, &c., of the one State, I have done so because I am a citizen of it; but the gigantic importance of the whole South may be more justly estimated by a careful consideration of what is here submitted in relation to*

ALABAMA.

STATISTICS OF POPULATION AND TRADE.

1. POPULATION AS INFLUENCED BY FREEDOM.

DR. BENNET DOWLER, of New Orleans, a profound antiquarian and vital statistician, has lately prepared an interesting pamphlet, in which he shows the favorable influences of republican governments, in developing and extending *population*. Dr. Dowler has promised to continue the subject in our Review. We make some extracts from his pamphlet.

2. SPANISH AMERICAN POPULATION.

Everywhere, says Humboldt, "in the Spanish colonies, the places the first peopled are now the most desert."† This downward tendency of all the races, white, black, red and mixed, is not arrested by exuberance of food, nor by moderation, nor by scarcity, nor by the diffusion of population, nor by the concentration of population, nor by any known modification of climate, as will be seen hereafter.

Has not the monarchical principle (including under that term the hierarchy, and the mis-called republicanism of the South), retarded the development of population? A rapid survey of several countries where monarchy has prevailed in the new Continent, may prove acceptable, even if it fail to demonstrate the hypothesis under consideration. It is not intended to discuss the ecclesiastical polity of the South, so fundamentally different from that of the North.

* National Intelligencer.

† Narrat. VII, 136.

The hierarchy, in itself, in its divine mission, is not within the pale of vital statistics, except so far as it becomes an accelerating or a retarding element in the science of population. The military despotisms, called republics, have not, practically speaking, attained to the North American representative principle, any more than the Ottoman Empire. With respect to the southern hierarchy, Humboldt says, after personal observation, "that the feeble civilization introduced by the Spanish monks pursues a retrograde course." (Nar. V, 117.)

The population of Mexico, is now less than it was three centuries ago—the white race not exceeding one million, perhaps not 800,000. Peru has less than a million* of all colors, and is depopulating, particularly with reference to the white race, which latter does not equal the population of Cincinnati. Lima, founded in 1534, has fewer souls than the second Municipality of New Orleans.

Bolivia and Chili, each contain but little over a million, while Buenos Ayres or the Argentine Republic, does not contain a quarter of a million, and, of the numerous republics (13), composing the Argentine Confederation, some contain only ten thousand inhabitants, three under 20,000, seven under 40,000, and none reaching one hundred thousand, except Paraguay, which has only a nominal connection with the Confederation. Mr. Macgregor mentions one of these States, *Misiones*, as having declined from one hundred thousand to ten thousand!

The republic of Uruguay, upon 69,000 square miles, has only 115,000 inhabitants, many of whom have estates containing from 60,000 to 200,000 cattle.† Central America one and a half millions, only one in twelve of whom are white. Venezuela covers 410,000 square miles, and had in 1800, according to Humboldt and Lavaysse, 900,000 inhabitants, but in 1841 the Minister of the Interior reported the number at 887,168, a decrease of nearly 13,000. The cities of Caracas and Valencia have now about the same number of inhabitants as in 1810, the latter founded in 1555, has only 10,000.

Venezuela, upon an area of 410,000 square miles, had in 1800 only 900,000 inhabitants, but in 1841, according to the Minister of the Interior, the number had declined to 887,168. "The people of the United States," says Mr. Macgregor, "would people a thoroughly new country of equal extent and riches as Venezuela, with an equal population in less than ten years." This is one of the best wheat countries.‡ M. Lavaysse says, that here may be seen associations of horses, in companies and armies, ranging from 500 to 1,000, regularly commanded by three or four chiefs of their number, which send out advanced scouts, placing a guard in the rear, all marching four abreast, ready to attack their enemies, as the jaguars, and even man, upon whom they leap. Upon the Pampas of Buenos Ayres, three millions of these animals roam without owners.§ Man, I repeat it, is alone unprogressive. The cities of Valencia, Caracas, Truxillo, and many others, founded nearly three centuries ago, have not advanced, nay, have in many cases declined greatly in population, in modern times.

French Guiana, 22,000 square miles, had in 1834 only 22,000 souls; Dutch Guiana, 50,000 square miles, 83,000; English Guiana, 76,000 square miles, settled in 1580, population in 1847 4,000 whites, coolies and colored 94,000; Republic of Ecuador, 320,000 square miles, population in 1827 but 492,000, in 1846 only 550,000 of all races, the whites were one-fourth.

The Villa de Upata, the capital of the Missions to Santa Maria, was founded in 1762. Thirty-five years after it contained only 657 souls, and in 1803 it had increased 112. In four other towns mentioned by Humboldt, in twenty-one years ending in 1818, the population had declined one-third.

The city of Para, $1\frac{1}{2}^{\circ}$ south of the equator, at the mouth of the greatest river of the world, of unknown depth, was founded 103 years before New Orleans, and had, according to Mr. Edwards, only 15,000 souls in the year 1846 (Voy. 25). Mr. E. says, this river affords from 40,000 to 50,000 miles of navigation. "The climate being peculiarly healthy, there being *no kind of epidemic*; its valley being as much superior to that of the Mississippi as the latter is to that of

* Capt. Wilkes: Macgregor gives a higher estimate.

† Macgregor, *Prog. Amer.*, I., 1034.

‡ According to Humboldt, New Grenada, Buenos Ayres, and other portions of South America, yield from 3,000 to 3,200 pounds of wheat per acre—four times as much as Northern countries—the French soil yielding only from 1,000 to 1,200 pounds. (Narrative, 7 vols., London, 1814 to 1829.)

§ Ibid.

the Hudson." (249,250.) Brazil covers an area nearly as large as Europe—about fifty-six times larger than Louisiana—nearly twenty-three times larger than the United Kingdom of Great Britain, and possesses (as the Rev. Mr. Kidder, in his new work, asserts), "not only whatever is beautiful, whatever is luxuriant, and whatever is magnificent in nature, but it enjoys a pleasant and *salubrious climate*—a degree of healthfulness unknown, etc." (II, 387). He quotes M. Denis as showing "that the influence of the climate and scenery is peculiarly calculated to inspire sublimity of thought, and to promote the power of the imagination" (II, 397). Mr. Edwards, after personal observation, says that "the climate of that country is singularly healthy, the heat being less oppressive under the equator than in New York." The estimates of the population of Brazil differ, ranging from $2\frac{1}{2}$ to $4\frac{1}{2}$ millions, of all colors. The former population was far greater, without doubt. The Huguenots in 1555 attempted to colonize Brazil. Their poor success was, doubtlessly, owing to the very despotism, which they, like our more fortunate ancestors, sought to escape in the wilds of the West. I will not stop here to show that the political principle of the North was rather the cause than the effect of the liberal ecclesiastical polity which prevails, and which is now more thoroughly democratic in some of the churches than in any of the States. The political principle divorced the ecclesiastical, not the ecclesiastical the political, as an element or essential condition of the government—a divorce that has proved most beneficial. The connection of the Church and the State exerts an unfavorable influence upon the science of population, greater than famine, as the sequel may show.

The whole of Spanish America, North and South, including the West Indies, under the monarchy, did not probably exceed fifteen millions of souls, reckoning the white, red, black and mixed races. Of this number about one-fifth, equal to the present population of the State of New York, were whites. Balbi, and some others, estimate the entire population of the American continent at thirty-nine millions; Malte-Brun at forty-five. South of the United States, including insular America, I estimate the number at twenty millions—one-third being in Mexico; five out of twenty millions being white. The estimate is based, not upon geographies, but upon the most recent books of travel and upon the best documents. These differ, however, greatly.

Thus it appears, that in three centuries, the entire Caucasian race in both Americas, south of the United States, has not equalled numerically, that portion of the Union lying west of the Alleghany mountains, settled by the present generation amid the conflicts of prolonged savage wars with the bravest and most sanguinary nations known in all history.

The vital statistics of South America, indicate extinction, or at least decline, as the probable resultants of the monarchical and military despotisms which have prevailed, and still prevail, upon the fairest portion of the globe. Statistical writers, in Europe, struck with these astonishing facts, are beginning to speak strongly upon this subject, and boldly to declare, that the absorption of these countries by the Northern Republic, is inevitable as a political event, and desirable as a vital one. The morality of this question does not belong to vital statistics. "The Anglo-American republic," says Mr. Macgregor, in his late work on America, "will overwhelm the whole hemisphere, from Hudson's Bay to Terra del Fuego. This is no prophecy. It is a clear daylight forecast of that not-to-be-arrested progress which is the inevitable destiny of America" (I, 199).

3. CANADA—THE WEST INDIES—SLAVERY.

Canada, to which emigration is invited by rewards from the crown, and in which more immigrants are received than in any other similar community, is thus spoken of in a recent work by Messrs. Chambers of Edinburgh, a work in which a predilection in favor of British institutions, is not concealed: "In comparing Canada with the (United) States, every intelligent traveler allows, that the *citizens of the Union are infinitely more active than the subjects of Great Britain*. Within the colonial territories, all public works, and most of the settlements, proceed slowly, the *system* seeming to be rather *inert*; while on the States' side of the boundary, every species of work proceeds with the most astonishing rapidity, canals being cut, railways formed, and towns built, in an inconceivably brief space of time. As upper Canada has nearly the same

natural advantages as the States, and as the people, it may be presumed, *are as well educated and as generally intelligent, it would seem that the true cause of the difference we specify is in the mode of conducting public affairs.*" Is it not the monarchical principle, in the one case, which retards, as it is the representative principle, in the other case, which accelerates the movement of the population? Do not these principles stand in the same antagonistic relations that the *vis inertia* bears to the moving forces in the material world? According to the *savans* of Edinburgh, in the new Universal Geography, the Canadas, in 1844, contained only 893,664 souls, notwithstanding the enormous vital importations to those countries for centuries.

Leaving the cold climate of Canada on the one side of the United States, for South America and the West Indies on the other, it will be found that the British possessions as well as those of other monarchical powers—I say it will be found that these colonies, abounding, nay exuberant, in all the luxuries of tropical climates, are actually decaying, or are nearly stationary, perhaps tending to extinction—a conclusion that will scarcely be deemed unwarrantable after examining the data which follow, and which are taken almost at random from many: English Guiana with an area of 76,000 square miles, settled in 1580, contained in 1847, but 4,000 whites, with coolies, blacks and mixed races, amounting to 94,000.

The British Colony called the Balize or Honduras, in America, situated between 15° 54' and 18° 30' N. Lat., containing 16,400 square miles, and never visited by the yellow fever,* had, by the returns of 1845, only 399 whites; the total population was 10,709.

In many of the British West India Islands, the population is either stationary or declining, particularly as it regards the black race. The following statistical memoranda are taken chiefly from the Library of Useful Knowledge, by Mr. Porter and Professors Long and Tucker, on America and the West Indies, and from Mr. Macgregor* (Lond. 1845, 1847). In St. Vincent the decrease by deaths, beyond the number replaced by births, during fourteen years ending in 1831, was 2,579, or not quite $\frac{1}{4}$ per cent. per annum. In Dominica for 9 years ending in 1826, the deaths exceeded the births 662, in a population of 17,959. The total population of all the races in Nevis, in 1788, was 10,070; in 1836 only 9250; the deaths having exceeded the births among slaves, in 14 years ending in 1831, by 213 in a population of 9602, and in three years after, by 327. In Jamaica, from 1817 to 1832, the slaves constantly declined, from 346,150 to 302,666; a decrease of 43,481, or much over one-eighth!

In St. Christopher, from 1817 to 1831, the same class decreased 344 in 20,168. Martinique, a French West Indian island, has, among the whites, free blacks and colored, 37 deaths to 29 births; among slaves, 35 deaths to 32 births. Guadeloupe (French), on December 31st, 1835, contained 31,253 free persons, and 96,323 slaves; among the former there were but 28 births for 34 deaths!

Nevis, from 1809 to 1823, was nearly stationary; the last period gives 11,000, the census of 1812 gave 10,430. Grenada had a total population in 1823 of 29,000, the slaves 25,000; in 1791 the whites 1,000, in 1823 only 900; in 1815 slaves 29,381, in 1820 only 25,677, in 1823 only 25,000. The slaves in St. Vincent, in 1817 were 25,255, in 1820 only 24,252, in 1823 only 24,000. In Dominica in 1805, the total population was 25,031, in 1823 only 20,000; slaves at the former period 22,083, at the latter 16,000; free colored, at the former 4,417, at the latter 2988. Montserrat in 1805 had 9500 slaves, in 1812 only 6,534, in 1823 only 1,500; in 1805, free, 1250, in 1812 only 442! In the Virgin Islands, in 1788, the slaves were 9,000, in 1823 only 6,000! Tobago, in 1805 had 14,883, in 1811 it had 16,897, in 1817 only 15,470, in 1820 but 14,581, and in 1823 only 14,000; from 1815 to 1823 the total population declined from 18,000 to 16,000. Trinidad, perhaps, declined less than any other island, at the period now under consideration (a period long anterior to the great emancipation act), yet the slaves in 1817 were 25,941, in 1823 only 23,500. St. Lucia contained in 1788 a total population of 20,968, in 1810 only 17,485, in 1823 only 17,000; at the former period the slaves were 17,221, at the latter 13,000. The Bahamas, in 1810, contained a total population of 16,718, in 1823 only 15,500. Thus, during this period, every British West India island exhibited a more or less rapid decay.

Hayti, French and Spanish, has shown a vital progression unknown to the

* See Macgregor's *Progress of America*, Lond., 1847—a voluminous work.

British possessions. Humboldt, estimated its population at 820,000, others at a million, anterior to 1823, since which it has probably declined. Macgregor, in 1847, estimated the population at 700,000, a decline of 120,000 in 24 years; the slave population alone was estimated by Necker, in 1788, for that island, at 620,000. The other West India islands belonging to the Spanish, French and Dutch, do not differ materially from the British; Cuba is the most prosperous—but if the vast and disproportionate importation of negroes be deducted, 15,000 to 26,000 per annum, it will be seen that the principle of population is not really progressive.

The Registers of twelve English West India islands, for three years, ending in 1822, show a decline of one in 46 slaves, for that short period, that is from 617,799 to 604,444; in some other islands the decline was one in twelve in three years!

Humboldt has summed up the population of the British West Indies, to the close of 1823. Total, 776,500; slaves 626,800. The total in 1788 was 528,302; in 1812, 732,176 (Colquhoun); the slaves having been 634,096, nearly the same as in 1788, notwithstanding the vast numbers introduced; for in sixteen years ending in 1786, no fewer than 610,000 were imported to that island (Bryan Edwards). Jamaica, in 1734, had 86,146 slaves, 7,644 whites; in 1800, slaves, 340,939; in 1810, slaves, 320,000; in 1812 only 319,912; in 1815 only 313,814; in 1816 but 314,038. From 1787 to 1808, the number of slaves imported to the island, in addition to the above, amounted to 188,785, altogether in 108 years 676,785 (other authorities say 850,000), and yet there exists in Jamaica not the half of that number. The whites, in 1787, numbered 28,000, in 1791 only 30,000, in 1820 only 25,000; in 1816, free colored, 45,000, in 1820 only 35,000. Barbadoes, 1823, total 100,000, slaves 79,000; in 1786 the slaves were 79,220, in 1811 only 79,132; in 1811, whites, 15,794, in 1823 only 16,000; in 1805, the free colored, 17,300, in 1823 only 5,000. Antigua, in 1823, contained 40,000 souls, 31,000 were slaves; in 1815 the slaves were 36,000, in 1820 only 31,053. Saint Christopher contained, in 1823, a total population of 23,000; slaves 19,500; the slaves in 1805 were 26,000, at which time the total population was 30,300, showing a decline of more than one-third in eighteen years. "In several of the West India islands," says Humboldt, "under the English domination, the population diminishes five or six per cent annually" (Narrative VII, 135.)

According to Humboldt, Gallatin, and others, it appears, that previous to 1786, the British had imported into their West India islands, 2,130,000 African slaves. The whole importation of that race in the United States, from first to last, was, according to Mr. Gallatin, only 300,000. Thus, the British West Indies, settled a century before North America, received more than seven times the number of slaves ever received in the United States, yet, in 1823, under British management, only 627,777 remained! More than one million and a half had disappeared! One million and a half less than the original importations! The greatest of all physiological curses is the death, or the extinguishment, of a race. This was not the fault of the negroes; they were under the control of their masters. Left to themselves they are, so far as facts can guide the inquirer, alike incapable of rational republican or monarchical government. Their experiment in St. Domingo has failed to secure the great objects of all good government. Of the free blacks of the United States, it is not necessary to speak fully, as the subject is too extensive for this paper. Impartial travelers, and statistical writers, admit that their condition, whether regarded in a social or sanitary point of view, is deplorable in the extreme. Emancipation suddenly arrests their vital progress, longevity, psychological energy and physical improvement. Their numerical increase is not inherent, but extraneous and contingent, arising from absconding and manumitted slaves. Insanity, idiocy, pauperism,* disease, short life and speedy death, everywhere mark the downward progress of free blacks; I ought to except those of New Orleans, who are not only long lived, but healthy, wealthy, moral and progressive.

M. De Tocqueville,† a profound observer, and an opponent of slavery, says, of the slave, "if he becomes free, independence is often felt by him to be a heavier burden than slavery. The prejudices of the whites against the blacks increase in proportion as slavery is abolished. The inhabitants of the North

* See the Census of the United States.

† Democracy in America, I, 33, 386, 405.

avoid the negroes with increasing care, in proportion as the legal barriers of separation are removed by the legislature."

The statistics of New York and of Philadelphia and of other cities where free blacks abound, show that the average mortality is more than twice as high among them as among the whites, and, I may add, slaves. Professor Lee, and Dr. Emerson, have published able papers upon this subject. The distinguished Mr. Lyell, of England, after personal observation, admits, that experience has fully proved, that *emancipation checks the increase of the black race*, and, that the increase of slaves shows that they are not in a state of discomfort, oppression and misery.

The moral bearings of this matter ought to be paramount to vital statistics, no doubt; the latter, however, is the only one now properly under review, and the result is one of the most extraordinary in the natural history of man, namely, that 300,000 Africans under republican and domestic government and management should increase in a few generations to three or four millions, presenting, at the same time a greater number of long lived, healthful persons, than any people of Europe, not excepting the most favored classes. Experience shows, that up to the present time, all monarchical governments have not only failed to advance the vital condition of the negro, but they have actually contributed toward his extinction, and though the precise cause of this is not very manifest, yet, it seems that one of the essential conditions of his decline belongs to the form of government.

The Liberia experiment has been conducted not only with liberality, but with skill and energy; yet, after a trial of twenty-six years, made under the most favorable auspices, the total population of the republic of Liberia, according to the last report of the Colonization Society, was only 18,000, including the blacks sent from the United States, as well as those captured from the slave traders, and those natives of Africa who are citizens of the colony. Should this experiment in self-government prove successful, as the friends of humanity ardently desire, it will be one of the greatest achievements of the age. Millions will spring to life in the deserts of Africa.

4. THE COMMERCE OF THE LAKES.

We find in the Buffalo Commercial Advertiser, of the 29th ultimo, a series of interesting tables, setting forth the names and capacity of all the vessels now enrolled and licensed upon lakes Michigan, Huron, Superior, St. Clair, Erie, Ontario and Champlain. The Commercial thus sums up this valuable information:

NUMBER OF AMERICAN VESSELS AND TONNAGE.

95 steamers,	38,912.53 tons.	93 brigs,	21,330.27 tons.
45 propellers,	14,435.37 "	548 schooners,	71,618.22 "
5 barks,	1,465.88 "	128 sloops and scows, ..	5,484.25 "

Total,

153,426.62

TOTAL TONNAGE AND VALUATION.

45,067 tons steamers,	\$3,380,000
15,985 " propellers,	950,000
101,080 " sail vessels,	3,538,000

The apparent discrepancy between these tables arises from the fact that in the latter is included the British tonnage on Lake Ontario.

5. SUGAR.

From a statement of the product and consumption of sugar for the last four years, we gather the following facts:

Total growth, tons,	905,000	1,087,000	1,061,000	845,000
Stock, March 31,	121,000	87,000	143,000	130,000
Total supplies,	1,026,000	1,174,000	1,204,000	975,000
Stock, after March 31,	87,000	143,000	130,000	
Total consumption,	939,000	1,031,000	1,074,000	
Consumption in 1848,			1,074,000	
For consumption in 1849,			975,000	
Deficiency this year,				99,000

SOUTHERN INDUSTRIAL PROGRESS.

I. COTTON AND COTTON MANUFACTURES AT THE SOUTH.

COMPARATIVE COST AND PRODUCTIVENESS OF COTTON, AND THE COST AND PRODUCTIVENESS OF ITS MANUFACTURE: BY CHARLES T. JAMES.

NATIONAL WEALTH, together with its creation and accumulation, constitutes a subject on which much has been said and written; and yet there are thousands of persons, otherwise enlightened, who appear to know but little about it, or, neglecting the principles of true economy, seem to regard them as being of little or no importance. The writer does not, however, undertake, in the following pages, to portray the science of political economy, but, to give some practical hints, mostly applicable to a single branch of business, on the creation and accumulation of wealth. In passing, it may be well to remind the reader of the well known fact, that, as far as national wealth is concerned, it is made up of the wealth of individuals. He, therefore, who points out the means of accumulating wealth, shows how the wealth of communities and nations is increased. In order to confer the greatest and most lasting benefits by the creation of wealth, it is highly essential that its elements, and the proceeds of their products, should be so distributed, that while they enrich the capitalist and employer, they should furnish a fair compensation to the industrial classes, and afford them, at least, a full supply of the comforts of life. Without such a result, however rich, no nation can be happy, as a people; for, without such a result, though the nation may be rich in the aggregate, the great masses of the people may suffer all the wretchedness of penury and want. Witness, for instance, the example of Great Britain. If, in that kingdom, the fruits of capital and industry were so distributed that labor should receive a due reward, the miseries of privation never need be felt by the industrial classes. On the other hand, though the British Empire is immensely rich, the British people—that is, the masses—are miserably poor. Comparatively, the wealth is grasped in the hands of a few, while a vast majority are reduced either to absolute pauperism, or to a state closely bordering on it. To perpetuate this condition of the laboring poor, there is of the entire wealth of the kingdom, no less than \$3,730,000,000 absorbed in the public debt! The interest and charges on this enormous sum, are no less than \$130,000,000 per annum, to be paid by means of taxes and impost and excise duties, which are eventually, though indirectly, laid on labor itself. From that source alone the aristocracy as well as the royalty of Great Britain draw the above amount, to say nothing of much larger sums for the support of royalty, and for governmental purposes. In this way, is industry robbed of much of its reward; and of the rest, more hereafter. However desirable wealth may be, Heaven forbid that the United States should ever possess the wealth of Great Britain, if they must take her poverty and wretchedness with it.

The elements of wealth, I take to be, all that is combined for its production. They are labor, skill and materials. Wealth is the direct product of this indispensable combination—while the circulating medium, whether gold and silver or any thing else, is a convenient adjunct, to facilitate the operation. Money is not wealth, except merely as a house of delegates are the people—by representation. The moneyed man, is a man of wealth only by implication. Having nothing but money, he has no actual wealth—yet he possesses the talisman that can, not create, but command it. All the market value of money is absolutely dependent on the combined operation of labor, skill and materials. These again are valueless in themselves, each by itself; and their value is enstamped on them by means of their combined operation and product; and the latter being valuable only as calculated to supply the wants of mankind, to satisfy their appetites, and to cancel their wishes. The metals are valueless, as truly as the refuse of their ores, without labor and skill to reduce them to desired forms. So would be the labor and skill without the material. So, also, would be the product of the combination, unless adapted to the wants or desires of man. This is all the value of any thing, in a commercial sense. From these plain and simple facts, we learn: First—that labor, skill and materials, are the elements of wealth, and which latter consists of the combined product of the three former:

Second—that that only can assume the character of wealth, which can be applied to some definite purpose for the use of mankind: Third—that money is valuable only as the representative of wealth—as the medium of exchange by which business transactions are facilitated, and the creation and accumulation of wealth accelerated. In these senses alone is it useful or valuable.

For instance—A. has materials for a hat, but he cannot work them into the desired form. To remain in his hands, they would be valueless. But B. purchases the materials, for which he pays four dollars; and thus enables A. to purchase a pair of boots. B. fashions the materials into a hat, which he does not want. C., however, wants it, and pays B. six dollars for it. Here, then, is wealth created to the amount of six dollars, by the labor, skill and materials of A. and B. Its value to B. is six dollars, because with that money he can purchase a barrel of flour, and which flour he wants. It is worth the same to C., because he wants the hat more than he wants six dollars. Yet, the whole would have remained valueless, without the labor and skill of B., and without the several wants of A., B. and C. And the money exchanged between them would have been useless and valueless, unless each could have purchased with it what he wanted. This is the use of money, and this use alone stamps it with value. It is this which makes it, not essentially one of the elements of wealth, but a means by which the combination of those elements is more readily brought about, its operations facilitated, and its products more rapidly enhanced. From these simple and well known truisms, we arrive at a deduction equally simple and true, that where the elements of wealth, together with their hand-maid, capital, are most equally and judiciously distributed and combined, their operation will be most effective, and most subserve public and individual good.

The entire amount of wealth embodied in any quantity of boots and shoes, though a pile as large as the Alleghany mountains, would be no greater than that in a few pairs actually wanted for use; and all the balance would be so much waste of time and materials. So of every other article. To command a price and a profit, the public want must be the limit of production. From this rule, it does not necessarily follow that the productions of a country should be limited to the demand at home. One country may produce more of an article than its wants demand, and another may produce less. The latter country may produce more of another article than it can consume, and of which there is a deficiency in the former. Now, if each of these two countries can produce the article of which it has a deficiency, at a less cost than it can be purchased of the other, then there is a mutual loss, and so a loss to either, if such be the case with either, and vice versa. One country produces a raw material for manufactures. After using at home all that can be used to a profit, and there being no object for a profitable application of the redundant labor, then it is good economy to continue the production of the article, in the quantity equivalent to the foreign demand. But when the supply may extend beyond that limit, it should be curtailed; because an over supply always gives the purchaser the advantage in the market, when the profit of manufacturing at home, is greater than that of producing it. Take the case of an individual farmer, if you please, to illustrate this position. A. raises one thousand bushels of corn in a year; and, wanting but five hundred bushels for his own consumption, he sells five hundred to B. But B. raises one thousand bushels of wheat, and requiring but five hundred for himself, sells the other five hundred to A. Now, if A. makes ten cents per bushel on his corn, and B. makes twenty cents per bushel on his wheat, it is evident that B. has the advantage, by fifty dollars. It is equally evident, that if A. can raise wheat at the same cost B. can, he should curtail his crop of corn, and grow his own wheat. The same rule holds good of communities, states or nations.

Suppose, again—B. has flouring mills. A neighboring community furnishes a full supply of wheat for them. B. converts this wheat into flour, and sells it to that community, at a net profit of twenty per cent. If that community have equal facilities with B. to erect and operate flouring mills, and can still raise all the wheat they want, is it not perfectly evident that it would be much to their interest to manufacture it at home?

If, again, the people of the United States should ship all their wheat to Europe to be manufactured into flour, and then purchase it back again at an advance of one hundred per cent. on its original price; that would be considered a bad speculation and a great sacrifice of wealth; provided the people of this country could manufacture their wheat at a less cost, and especially if they employed

the requisite labor, skill and capital, in some pursuit far less productive. A like mode of procedure, with any other product, is equally impolitic. If, by the same amount of outlay of labor, skill and capital, a greater amount of wealth can be created by the manufacture of a raw material than by its production, common sense decides at once, that none should be sent abroad which can be manufactured at home. A yankee farmer would be considered rather a *verdant* specimen of his race, who should transport his corn twenty miles, and sell it to another person to convert it into pork at a profit of fifty per cent., when he could just as well do that at home himself, and had nothing else to do by which to earn one half the money. Yet, something like this, do our cotton growers and capitalists of the South.

The proper distribution and application of the elements of wealth are important to the creation of any amount of wealth, however small. A. is a person of inventive genius. He constructs a machine, curious indeed, which excites the wonder and admiration of the beholder; but it is applicable to no useful purpose whatever. Here is a misapplication of the elements of wealth. Their product is stamped with no value. B. can sell but one thousand pairs of boots. Yet he manufactures ten thousand pairs. Nine thousand, no one wants. They are without value. Here, the elements of wealth are misapplied, besides not being properly distributed.

Had A. applied his labor, skill and materials, to the construction of a machine to serve some useful purpose, and had those combined by B., in the nine thousand and extra pairs of boots, been appropriated to a similar object, both would have been benefited, wealth would have been created, and public good promoted by their operations. As it is, there is a dead loss to themselves, and the products benefit no one. In fact, they have destroyed even the value of the materials, and suffered the loss of all the labor.

A bale of cotton weighs, say, four hundred pounds. On the plantation it is worth, say, twenty dollars. It is the demand for the article alone which imparts that value to it. Thus, this bale of cotton is the representative of that amount of wealth, created by labor, skill and materials. On its way to the market, on its voyage across the Atlantic, and on its passage to the storehouse of the manufacturer, its value increases at every step, by the expenditures which attend its removal. All this value, thus increased, depends eventually on the usefulness of the purpose to which the article is to be applied. Finally, its market value is again very much increased by its conversion into cloth, &c., the object of its growth. Thus, through all its various stages, from the planting of the seed to the sale of the manufactured goods, its value has been constantly on the increase, by means of labor, skill and materials, aided by the magic powers of wealth or capital previously created by similar means. The seed, labor and skill, as far as cotton is concerned, would have been worthless without the land. The cotton would have been worthless without conveyance to market. There it would have been worthless without labor and skill for its manufacture. Converted into cloth, it would have been worthless, but for the demand for the article to serve a useful purpose. All these combined, have created an amount of wealth equivalent to the full market value of the finished article, less the materials used in the process, other than cotton.

The market value of an article will, at all times, bear some relation to the demand for it, and its price will fluctuate, as the supply may be comparatively great or small. Hence, it does not follow that because a single bale of cotton may be productive of profit to its producer, every man may grow cotton to any amount he chooses, with a similar result. The demand for any article—that is, a demand that will ensure a profit to the producer—must ever, as a general rule, by the general laws of trade, be limited by the actual wants of the consumer. All excess beyond this, as a general rule, will inevitably reduce prices in nearly the same ratio; and it will usually be found that, in the long run, all that has been expended in the production of that excess, is virtually lost to the producer; that is, if the over-supply is continued for a long time. Nothing is exempt from this rule. Even gold and silver are subject to it; and each great and permanent increase of these metals, reduces their permanent value in a corresponding ratio. Even temporary fluctuations in the amount of the circulating medium, are as distinctly marked by the rise and fall of interest in the transactions between lenders and borrowers, as the fluctuations in the prices of agricultural crops, in the event of a remarkable short crop being succeeded by one extremely

great, their own is, to say the least, not behind her sisters. But will the reader pardon us, when we intimate an opinion that the error of our people, in connection with this topic, is an over-modesty—a disrelish to make their own greatness, as a people, the theme of their conversation, however conscious of the actual fact. We are by no means joking in these remarks. Georgia has suffered in the estimation of her sister States, and of the world, from the mere fact that while others make their States renowned by their constant exposure of them, as cities set on hills, the people of Georgia, on the contrary, would seem to prefer rather to put her light under a bushel, so that others could neither see nor appreciate her wonderful advantages and immunities as a people. Look at the reputation which other States have actually acquired upon Georgia enterprise and Georgia improvements. And we do not blame them for doing so. This thing of considering one's State, and claiming for one's State, all that is enviable, ay, even far beyond any body else's State, is not excusable alone, it is positively praiseworthy. If one can't boast of his own home, he need hardly expect others to boast for him. And whether real or otherwise, with the bulk of the world this boasting passes as reality, and the State reaps the benefit in her reputation abroad, and, we may add, in the respect and love of her own people at home.

Well, if any southern State, ay, or northern either, has just cause to boast of their homes, surely Georgians may rightfully boast of theirs. She makes more cotton and corn—has more railroads—more manufactories—more flourishing towns—more shipping (possibly with the exception of New Orleans)—pays less taxes—has more schools and more scholars—has more diversified mineral wealth, from iron to gold inclusive—she is dotting the country with the finest flour mills—she is nearly ready to furnish her own citizens and the people of other States with flour to eat, with cloth to wear, with iron to work, with lime and marble to build, and to fertilize—she is dispensing with the industry of other States, by making her own industry furnish her supplies, luxuries and all, from apples and onions, sugar and molasses, to beef and pork, and all else that is good inclusive—she has a smaller public debt—a finer climate, or climates (for she has them by the assortment)—as good a government—as wholesome laws—as perfect a judiciary—as thriving a population—and is more rapid in her onward progress toward the full development of her extraordinary resources, than most (may we not brag a little while on this topic, and say, than any) of her sisters of the South. Why shall we not boast of Georgia? She is worthy of all the commendations her people can bestow upon her. She is a most generous mother; and he is but a churlish son, who does not think her better, and love her more, “than every land beside.”

We have been led to the foregoing reflections, by noticing of late, in various quarters abroad, kindly and complimentary references to our honored old commonwealth, by those who seem to have just woke up to the rapid march of Georgia improvement, and the undoubted fact of Georgia greatness. We are thankful for every kindly tribute; and promise, in return, that Georgia shall be the exemplar State of the South, to point her sisters to what they can do, and what, at least in their degree, they may become, through the spirit of enterprise, under the guidance of sound counsels.

5. MANUFACTURES—NASHVILLE, TENNESSEE.

NASHVILLE, February 27, 1849.

J. D. B. DE BOW, Esq., New Orleans: From a correspondence which we held during the summer of '47 (you in New York and I in Boston), I infer that some account of the cotton manufactories of Tennessee will not be unacceptable to you. I inclose a short and hurried letter, written by me to a friend who desired for another such information.

Tennessee is completely aroused to the importance of diverting a portion of her surplus labor to manufacturing, and will soon become prominent in that way. The truth is, owing to the low price of provisions and labor, and abundance of fuel, with the raw material right at our doors, we can make coarse cotton and woolen goods cheaper than they can be made elsewhere.

Very respectfully,

SAM'L D. MORGAN.

NASHVILLE, February 13, 1849.

V. K. STEVENSON, Esq.—Dear Sir: In answer to your note of this date, asking me to furnish to you (for the use of a friend who desires it) such information as I may possess, with regard to the cotton manufactories of this State, I have to remark, that the knowledge which I possess extends only to those establishments

situated within the "middle division" of the State; and even that is too superficial to be entitled to much consideration.

There are probably now in operation within the bounds of "Middle Tennessee," some twenty different mills for the manufacturing of yarns and cloths. From the best data I have at command, I estimate the number of spindles in operation at not less than 18 or 20,000. There are but few of these mills which as yet are making cloths, though several more, I understand, are preparing to do so. The article manufactured consists chiefly of cotton yarns, varying in sizes from number 3 or 4 to number 13 or 14. Some two or three of them also manufacture a heavy article of wool and cotton goods, used for negro clothing.

In addition to the mills alluded to, there is now being erected, and very near its completion, another one at Lebanon, 30 miles distant from Nashville, and which, in point of construction and machinery, is believed to be *fully equal to any one in America of its size*—the buildings all being of the best material, and on the most approved plans—fire-proof throughout. The engines for propelling it, as well as its operative machinery, embrace all the latest American and European improvements. The buildings (which are in greater part four stories high) cover an area of very nearly or quite three-fourths of an acre. When finished it is designed to contain 6,000 cotton and 2,000 woolen spindles, and 240 looms, capable of producing from seven to eight thousand yards of cloth daily; and as the goods which it is intended to produce will be of the heaviest description, the quantity of cotton which it will require for a year's operation will be about 2,500 or 3,000 bales, with a proportionate amount of wool. So you will perceive that within a short time there will be in operation, in this division of the State, certainly not less than 25,000 spindles; and as these spindles will all be engaged in producing the very heaviest description of yarns, the entire amount of cotton required for them will not be short of 8,000 bales.

In the eastern, and also in the western, division of the State, there are many other small mills, of which I know too little to enable me to give to you, for your friend, any information of a character sufficiently reliable to make it valuable to him. I hesitate not, however, to assert that, together, the two other divisions possess not less than 10,000 spindles, and consequently increase the quantity of cotton manufactured annually to not less than 12,000 bales in all—more likely exceeding than falling under this number.

As to the names of the different mills, their owners, and the post-offices nearest to them, I regret that I am unable to give them to your friend with that degree of accuracy which I would otherwise be pleased to do. The inclosed memorandum will give you all the information I possess at present, on this branch of the subject—remarking, that I do not submit it to you as being anything more than a mere approximation to the number of spindles operated in each mill—with, however, the further remark, that I am satisfied that I have not over-estimated them in the aggregate.

In great haste, your obt^d serv^t,

S. D. MORGAN.

P. S.—You will observe that in the list of mills I have included two which are barely beyond the boundary of Tennessee—in North Alabama. I have included them because a large proportion of their manufactures are consumed in this State; and one of them, at least, is more intimately connected with Tennessee than with Alabama.

SOUTHERN AND WESTERN STATISTICS, ETC.

1. TRADE AND COMMERCE OF ST. LOUIS.

In the closing number of the last volume of our Review, we gave the most elaborate and full statistics of the great and growing commerce of New Orleans, in every department. We give with equal interest and care now, the statistics of another vast and growing western city, St. Louis, which we obtain from a pamphlet from the pen of Mr. Chambers of that city, the able editor of the Missouri Republican.

Imports into St. Louis, for the years 1844, 1845, 1846, 1847 and 1848, commencing January 1st and ending December 31st.

	1844.	1847.	1846.	1845.	1844.
Apples, green, bbls.	12,628	2,128	3,728	6,314	7,233
Beef, tierces.	9,369	5,735			
“ bbls.	7,866	4,720	1,716	5,264	4,280
“ half bbls.	87		169	99	63
Bacon, casks.	25,820	14,425	11,803	6,180	19,225
“ hhds.	3,603				
“ bbls.	2,847				
“ box.	3,775	1,289	618	149	484
Butter, hhds.	66				
“ bbls.	2,200	1,084	823	558	618
“ kegs and jars.	8,131	4,199	3,940	3,420	3,099
Brooms, dozen.	6,744				
Beeswax, bbls.	300	759	476	319	337
“ boxes and sks.	430	798	646	631	837
Bagging, pcs.	1,084	1,442	3,243	4,217	3,120
Beans, hhds.	79				
“ bbls.	3,258	5,337	4,370	2,091	1,518
“ sks.	2,003	4,134	2,199	1,320	383
Bran, tons.	30				
“ sacks.	63,726				
Barley, bushels.	111,003	114,680	20,277	32,231	8,478
Buffalo robes, packs.	15,188				
“ “ loose.	2,227	7,782	16,717	14,475	33,670
Corn, bushels.	699,693	1,016,318	688,649	107,927	56,720
Castings, tons.	428	1,764	1,604	1,590	937
Cheese, casks.	84	236	430	221	550
“ boxes.	8,333	12,150	11,232	8,822	9,337
Cider, bbls.	1,180	336	421	763	550
Coffee, sacks.	78,842	77,767	65,128	46,204	38,721
Cotton yarns, pks.	11,480	12,762	13,260	10,756	5,354
Flour, bbls.	387,314	328,568	220,457	139,282	88,881
“ half bbls.	541	686	1,059	563	530
Furs, packages.	1,194	2,148	3,011	2,535	973
Feathers, sacks.	856	384	768	816	471
Flaxseed, bbls.	4,908	4,992	3,693	2,136	2,741
“ sacks.	7,349				
Ginseng, bbls.	119	14	19	20	75
“ sacks.	33	253	58	34	63
Glass, boxes.	19,834	18,722	24,630	23,563	4,697
Hemp, bales.	47,270	72,222	33,853	30,997	59,292
Hides.	62,097	71,877	63,396	70,102	55,572
Iron, bar, ton.	6,341½	15,070	2,484	2,282	1,981
“ pig, “	4,463	2,729	2,326	1,480	1,469
Lead, pigs.	705,718	746,128	730,829	750,877	595,012
“ bar, lbs.			7,621	88,650	19,300
Lard, bbls.	67,339	32,021	26,462	7,652	12,293
“ kegs.	14,180	8,595	14,730	6,659	12,999
“ tierces.	6,579	150			
Whisky, bbls.	29,758	22,239	29,882	29,788	24,510
Brandy, “	3,333	1,116	1,698	1,886	1,477
Wine, “	7,177	2,611	3,690	3,084	2,525
Malt liquors.	4,282				
Lead, wh.—kegs.	2,247	5,256	3,466	1,526	1,973
Molasses, bbls.	21,948	21,554	14,696	11,788	3,270
Nails, kegs.	49,596	22,589	28,073	21,587	23,703
Oils, linseed, bbls.	1,609	485	826	695	140
“ Castor, “	510	332	95	78	106
“ Lard, “	493	478	292	284	867

Onions, bbls.....	873	1,580	463	218	1,449
“ sacks.....	9,931	2,672	4,752	1,893	2,357
Oakum, bales.....	816	1,072	1,378	1,104	681
Oats, bushels.....	243,700	202,365	95,612	16,112	16,480
Pork, bbls.....	97,662	43,314	48,981	15,702	29,945
“ half bbls.....	1,923	288	39	89	73
“ bulk, lbs.....	8,854,000	285,797	630,765	261,754	136,333
Potatoes, bbls.....	2,424	2,852	3,625	2,449	3,915
“ sks.....	72,214	24,076	26,979	12,045	21,272
Peltries, pkgs.....	1,880	2,697	1,266	917	540
Rice, tcs.....	948	762	916	869	670
“ bbls.....				34	103
Rye, bushels.....	9,075	7,566	5,283	3,054	61
Rope, h'p c's.....	12,633	10,798	5,123	8,890	12,525
Shot, kegs.....	323		28	462	174
“ bags.....		88	1,026	2,112	88
Salt, bbls.....	38,800	44,380	58,948	21,157	27,736
“ sacks.....	204,744	106,392	177,724	112,684	124,234
Sugar, hhds.....	26,116	12,671	11,603	10,259	9,070
“ bbls.....	7,946	4,083	4,400	3,721	1,912
“ Havana, boxes..	6,866	15,028	1,352	516	1,630
Tallow, casks.....	398	112	303	75	32
“ bbls.....	797	2,217	1,114	688	810
Tar, bbls.....	5,027	2,217	1,558	1,630	528
“ kegs.....	2,360	5,656	5,776	4,128	2,011
Tobacco, hhds.....	9,044	11,015	8,588	11,564	9,707
“ man. bxs.....	5,446	6,548	7,903	7,777	7,380
Tea, chests.....	2,384	3,028	3,049	2,086	1,800
Vinegar, bbls.....	606	1,233	1,086	1,032	1,373
Wheat, bushels.....	2,194,789	2,432,377	1,838,926	971,025	720,663

AVERAGE RECEIPTS.

Below we annex a table showing the aggregate receipts of twenty of the leading articles of produce for the past five years:

Tobacco,.....49,918 hhds., 36,024 boxes.	Pork,....235,644 bbls., 2,361 half bbls., 9,772,649 lbs.
Hemp,.....253,634 bales.	Bacon,.....80,846 casks, 9,064 bbls. and boxes.
Lead,.....3,528,566 pigs.	Lard,....145,949 bbls., 57,364 kegs, 6,733 tierces.
Flour,....1,164,502 bbls., 3,379 half bbls.	Tallow,.....920 casks, 5,624 bbls.
Wheat,.....8,157,780 bushels.	Butter,....66 hhds., 5,283 bbls., 22,789 kegs and jars.
Oats,.....574,269 “	Whisky,.....136,177 bbls.
Barley,.....286,669 “	Hay,.....12,964 bales.
Rye,.....25,039 “	Bagging,.....13,096 pieces.
Corn,.....2,569,302 “	Bale rope,.....49,688 coils.
Beans,....16,574 bbls., 10,045 sacks.	
Beef,.....15,124 tcs., 23,836 bbls., 418 half bbls.	

Estimated value of thirty of the leading articles of Produce received at the port of St. Louis, from the 1st of January to the 31st of December, 1848.

Articles and aggregate amount.	Average rate.	Estimated val.
Tobacco, leaf, hhds.....9,044	\$45 00 per hhd.	\$406,980 00
“ manufactured, boxes.....5,446	13 20 per box.	71,887 00
Hemp, tons.....9,454	85 00 per ton.	802,590 00
Lead, tons.....24,200	74 00 per ton.	1,790,800 00
Flour, bbls.....387,584	4 25 per bbl.	1,637,232 00
Wheat, bushels.....2,194,789	70 per bush.	1,526,352 30
Corn, “.....699,693	23 per bush.	195,914 04
Oats, “.....243,700	21 per bush.	51,177 00
Barley, “.....111,003	38 per bush.	42,181 14
Rye, “.....9,075	35 per bush.	3,176 25
Beans, “.....14,196	40 per bush.	5,678 40
Beef, tierces.....9,369	8 50 per tierce.	79,636 50

Beef, barrels,	7,866	6 50 per bbl.	51,129 00
" half barrels.....	87	3 28 per hf. bbl.	282 75
Pork, tierces.....	1,074	10 00 per tierce.	10,740 00
" bbls.....	96,618	7 50 per bbl.	724,635 00
" half bbls.....	1,923	3 75 per hf. bl.	7,136 25
" lbs. bulk.....	8,454,000	2½ per lb.	211,250 00
Lard, tierces.....	6,579	17 50 per tierce.	113,132 50
" bbls.....	67,329	13 50 per bbl.	908,941 50
" kegs.....	14,180	3 50 per keg.	49,630 00
Bacon, casks.....	25,820	28 00 per cask.	722,960 00
" hhds.....	3,603	38 50 per hhd.	138,515 50
" bbls.....	2,847	7 00 per bbl.	19,929 00
" boxes.....	3,775	14 00 per box.	52,858 00
Whisky, bbls.....	29,758	6 80 per bbl.	201,454 40
Tallow, lbs.....	483,920	6½ per lb.	31,454 80
Butter, lbs.....	1,106,240	9 per lb.	99,561 60
Bale rope, coils.....	12,633	7 25 per coil.	91,589 25
Bagging, pieces.....	1,084	14 00 per piece.	15,176 00
Potatoes, bushels.....	157,697	30 per bush.	47,309 10
Onions, bushels.....	22,481	35 per bush.	7,868 35
Grease, lbs.....	201,350	3½ per lb.	7,092 25
Hides, green.....	10,458	1 50 each.	15,687 00
" dry.....	51,639	1 62 each.	82,655 18
Hay, tons.....	845	12 00 per ton.	10,144 00
Flaxseed, bushels.....	32,460	80 per bush.	25,968 00
Feathers, lbs.....	51,360	20 per lb.	10,272 00
Brooms, dozen.....	6,713	1 25 per doz.	8,391 25
Dried fruit, bushels.....	47,605	85 per bush.	40,464 25
Green fruit, bbls.....	12,628	1 50 per bbl.	18,792 00
Wool, bales.....	904	22 50 per bale.	20,330 00

Total estimated value,.....\$10,358,946 56

Our import tables show that the reception of at least twenty articles of produce not enumerated in this calculation, and whose aggregate value we should place at near *three millions*, thereby making, according to the best information we have upon the subject, the entire produce trade of this city, during the year 1848, worth, at the lowest possible estimate, *thirteen millions of dollars*.

SHIPPING, TONNAGE, ETC.

The shipping or carrying trade of a city, we presume, may be received as an evidence of her commercial importance, and when viewed in this light, the position of St. Louis is truly gratifying to all who feel an interest in her growth and prosperity. The whole number of steamers engaged in carrying on the trade and commerce of our city during the past year was 263, with an aggregate tonnage of 61,390 tons, against 274 steamers, with a tonnage of 60,094 tons during 1847; showing a decrease of eleven boats, but an increase in the amount of tonnage to the extent of 1,296 tons, and although these figures show a slight falling off in the number of vessels, nevertheless there has been a very material addition in the aggregate amount of tonnage employed, and the discrepancy is easily accounted for, by the fact that the boats employed in the trade during the past year were larger, and more permanent than formerly, and there were fewer transient ones of small class from the Ohio river and other sections. This remark will apply particularly to the Illinois river trade, which heretofore received a large number of transient light draught traders during a low stage of water from Pittsburgh and other points on the Ohio. In addition to the 263 steamers employed in 1848, there were sixty-eight barges, with an aggregate tonnage of 4,641 tons; also, there arrived at the wharf 349 keels and flats, whose tonnage, at a very low estimate, would swell the total amount employed in the carrying trade of this city for the year 1848, to upward of 75,000 tons. Annexed will be found a table, which shows the monthly arrival of steamers at this port, and where from, during the past three years:

COMPARATIVE ARRIVALS OF STEAM BOATS AT THE PORT OF ST. LOUIS,

From New Orleans, Cairo, the Ohio, Upper Mississippi, Illinois and Missouri Rivers, and all other points during the years 1846, 1847 and 1848.

	New Orleans.			Ohio.			Illinois.		
	1846.	1847.	1848.	1846.	1847.	1848.	1846.	1847.	1848.
January,.....	15	22	29	8	8	11	3	9	26
February,.....	33	15	26	26	16	12	42	8	33
March,.....	25	48	53	26	28	38	40	85	72
April,.....	27	77	47	35	41	43	44	91	67
May,.....	59	93	22	65	61	37	80	106	82
June,.....	36	49	30	52	37	44	51	60	53
July,.....	23	67	30	30	41	48	32	58	55
August,.....	32	24	26	44	37	55	32	41	71
September,.....	30	28	48	37	30	42	15	45	64
October,.....	32	22	51	48	67	43	41	57	70
November,.....	34	32	49	24	42	48	30	60	63
December,.....	49	23	35	27	22	8	36	38	34
Total,.....	395	502	426	420	430	429	446	658	690

	Upper Mississippi.			Missouri.			Cairo.			Other points.		
	1846.	1847.	1848.	1846.	1847.	1848.	1846.	1847.	1848.	1846.	1847.	1848.
January,.....	5	4	24	7	—	1	—	11	13	15	5	16
February,.....	31	8	20	1	1	1	—	10	9	21	6	13
March,.....	36	41	48	10	14	19	—	3	16	21	13	29
April,.....	55	74	76	20	32	33	—	1	18	14	12	14
May,.....	115	128	67	43	63	38	—	19	7	10	20	36
June,.....	98	91	75	47	48	39	—	8	13	11	13	16
July,.....	60	81	51	32	45	34	—	19	5	16	19	28
August,.....	56	51	75	29	32	40	—	10	16	18	24	27
September,....	46	57	66	27	23	39	—	18	21	16	28	64
October,.....	61	80	82	18	31	36	—	18	32	37	34	72
November,....	56	69	66	14	16	42	—	13	16	27	18	38
December,....	44	33	47	8	9	5	—	16	28	26	12	43
Total,....	663	717	697	256	314	327	—	146	194	232	202	396

Remarking upon the whole, Mr. Chambers says:

"St. Louis, from her position, is destined to be the termini of all the main railroads leading from the Atlantic cities to the valley of the Mississippi. Already efforts are making to push railroads from Boston, New York, Philadelphia, Baltimore and Charleston, to this point. The contemplated railroad from Mobile to the mouth of the Ohio, is urged on account of its anticipated connection with this city. The nation, with an unanimity seldom equalled on such a subject, accord to St. Louis the starting point of a National Road to St. Francisco, on the coast of the Pacific. The demonstrations made in various sections of the country, by public meetings, private efforts, and recent movements in Congress, give an assurance that the construction of a railroad to the Pacific will be undertaken by the nation and accomplished in a few years.

"In regard to matters of a more local nature, we have but little to say. Our city is rapidly improving in wealth and importance, even beyond the expectations of the most sanguine. Manufactories and machine shops are daily springing up in our midst, and many articles hitherto imported for domestic purposes have now become important items of export. The value and quantity of manufactured articles annually imported from the Ohio, are rapidly diminishing, and we look forward with a great degree of certainty to the time, and that at no very distant day, when St. Louis will not only prove the great commercial emporium of the Mississippi Valley, but also the machine shop of the entire West. Her facilities for the manufacture of many imported articles, are even now greater than the cities from whence they come; and it is only necessary for our manufacturing resources to be properly developed, to bring capitalists and mechanics hither, where their money and labor can be employed with certainty and profit.

"In 1840, with the exception of several flouring and saw mills, of inconsiderable

note, we were entirely destitute of manufactories; and even at a later date, our establishments in this respect were scarcely worthy of attention. Since, however, cotton, woolen, soap, candles, starch and various other manufactories, have sprung into existence, and are now driving a lucrative and extensive business—to say nothing of the foundries (about eighteen in number), flouring mills, machine shops, &c., with which the city abounds. Our population in 1830 was estimated at 6,694; in 1840, at 16,469; and by the late State census, at 56,000.

The State census was taken under circumstances which did not permit of precision or accuracy. Subsequently the census was taken by authority of the city council, and by that we now have evidence of the inaccuracy of the previous State returns. By the returns of the city officers, taken for the 1st day of January, 1849, we have a population of 63,471. Even this is believed to be short of the fact, for there are many of our citizens who look upon all inquiries by those who take the census, as intended for purposes of taxation. But taking the statements as made by the city officers, they show an increase in our population unsurpassed by any city in the West. The increase of the past, we believe, will not be equal to the incoming year.

We give a table of the population of the city, by wards, for the last three census:

	1845.	1847.	1849.
First Ward.....	6,866	9,970	9,972
Second ".....	6,566	7,645	10,193
Third ".....	4,683	5,744	10,232
Fourth ".....	5,321	6,354	9,221
Fifth ".....	6,225	6,667	10,933
Sixth ".....	6,574	11,453	12,920
Total.....	36,265	47,833	63,471

LOSS OF WESTERN STEAMBOATS.

From the Pamphlet of Mr. Chambers of St. Louis, we extract:

Steamboats destroyed on the Western Waters during 1848.—The following list, which we have compiled with great care, and from the most reliable sources of information within our reach, will show the number of Steamboats destroyed on the Western Waters during the year 1848.

Name of Boat.	How destroyed.	When.	Where.
Avalanche,	Burnt,	March,	St. Louis.
Admiral,	Sunk,	January,	Lower Mississippi.
Amulet,	"	"	Arkansas river.
Alert,	"	April,	"
Amelia,	"	July,	Red river.
Anglo Saxon,	"	February,	St. Mary's Landing.
Algoma,*	"	April,	Missouri river.
Batesville,	"	June,	Arkansas river.
Belle Hatchee,	"	August,	"
Brunswick,	"	October,	Lower Mississippi.
Beardstown,*	"	January,	Illinois river.
Blue Ridge,	Burst Boiler,	June,	Lower Mississippi.
Ben Rush,	Burnt,	"	Pittsburgh.
Clarksville,	"	May,	Lower Mississippi.
Caledonia,	Sunk,	January,	"
Champlain,	"	March,	Sublette's Landing.

NOTE.—Those marked thus (*) have since been raised and repaired. From the above, it will be seen that the whole number of Steamboats destroyed on the Western Waters during the past year, sum up fifty-nine; of this number, three burst their boilers and blew up, nineteen were burnt, and the residue, thirty-seven, were sunk. In addition to the above, a large number of minor accidents, involving but small loss of property, have occurred during the year of which we have kept no data. As regards loss of life in the above fifty-nine casualties, we estimate it at one hundred and thirty, and including all other accidents as far as can be ascertained, two hundred and forty-five souls. The loss of property we have no means of ascertaining, but at the very low estimate of ten thousand dollars in each case, the aggregate loss would sum up to \$590,000, independent of the loss of life and personal effects.

<i>Name of Boat.</i>	<i>How destroyed.</i>	<i>When.</i>	<i>Where.</i>
Corn,*	Sunk,	August,	Missouri river.
Charter Oak,	Burnt,	April,	Bailey's Landing.
C. Conner,	Sunk,	June,	Lower Mississippi.
Car of Commerce,	"	November,	Louisville.
Confidence,*	"	September,	Hamburgh.
Circassian,	Burnt,	February,	Cincinnati.
Defiance,	Sunk,	"	Liberty.
De Kalb,	"	October,	Ohio river.
Germantown,	"	August,	" "
Gondolier,	"	November,	Apple Creek bar.
H. Hudson,	Burnt,	February,	Cincinnati.
Hibernian,	"	March,	St. Louis.
Iron City,	Sunk,	December,	"
J. J. Hardin,	Burnt,	March,	"
Lightfoot,	"	May,	"
Laclede,	"	March,	"
Little Missouri,	Sunk,	"	Missouri river.
Mogul,	"	September,	Ohio "
Mail,	Burnt,	May,	St. Louis.
Missouri Mail,	"	"	"
Monterey,	Sunk,	December,	Kentucky river.
Maréngo,	"	September,	Lower Mississippi.
Meteor,	"	August,	Ohio river.
Major Barbour,*	"	February,	" "
Milwaukie,*	"	July,	" "
Monona,	"	March,	Lower Mississippi.
Mendota,	"	January,	" "
Pelican,	Burst,	March,	" "
Pekin,	Sunk,	December,	Upper "
Piney Woods,	Burnt,	October,	Lake Ponchartrain.
Pilot,	Sunk,	"	Arkansas river.
Paul Jones,	"	March,	Ohio "
Plow Boy,	"	September,	Missouri "
Ringgold,	"	February,	Arkansas "
Rambler,	"	March,	Ohio "
Robert Fulton,*	"	April,	" "
Rio Grande,	"	October,	" "
Sea Bird,	Blew up,	January,	Cape Girardeau.
Swatara,	Sunk,	March,	Mouth Ohio river.
Swan,	"	November,	" " "
Suwanua,	"	October,	" " "
Trenton,	Burnt,	February,	Cincinnati.
Tributary,	"	December,	Louisville.
Talma,	Sunk,	March,	New Madrid.
Time and Tide,*	"	February,	Lower Mississippi.
Wyandotte,	"	November,	" "
White Rose,	Burnt,	June,	Cairo.
W. H. Day,	Sunk,	February,	Arkansas river.
Yazoo,	"	March,	Lower Mississippi.
Yazoo City,	"	September,	Memphis.
Yallahusha,	Burnt,	March,	Lower Mississippi.

STEAMBOAT CASUALTIES ON THE WESTERN RIVERS IN 1848.

We have not before now been able to make room for the following interesting statistics of Steamboats, copied from the St. Louis Union of January 12 :

Below we give a list of steamboat casualties which occurred on the Western Waters during the year 1848. It has been carefully compiled, and is believed to be very nearly, if not quite, complete. It will be perceived that the number of boats which have met with disasters of various kinds, not including mere breakage of machinery, is one hundred and nine. Those totally lost were fifty-nine—more than a boat per week. An unusually large proportion were destroyed by fire.

A. W. Johnston.—Burst her boilers above Maysville, on the Ohio river; fifty or sixty lives

lost and a number of persons injured. Boat and cargo a total loss. She was a new boat, built at Wheeling, Virginia, and on her first trip.

Admiral.—Bound from New Orleans to Ouachita, was sunk to her cabin floor, by coming in contact with the *Clarksville*, bound down, heavily laden with cotton, about the beginning of the year. Owned in St. Louis; burden two hundred and forty-two tons.

Alert.—Snagged and sunk near Little Rock, Arkansas, in April. Total loss. Insured in Pittsburgh and Cincinnati for \$5,000.

Atlantis.—Cabin burnt at Portland, Ohio river, in December.

Algoma.—Struck a rock in the Missouri river, near Lexington, 5th April. Large amount of freight damaged. Boat raised and repaired.

American.—Burst connecting pipe near Madison, Ohio river, 20th December. Ten persons scalded—several fatally.

American Eagle.—Burst steam-pipe near Marietta, Ohio river, in March, by which four passengers were badly scalded.

Amulet.—Sunk in Arkansas river; boat and cargo a total loss.

Amelia.—The *Amelia*, Captain Sully, snagged and lost on upper Red river, in June. Insured. Cargo of cotton saved.

Anglo-Saxon.—Ran on a log and sunk near St. Mary's landing, Mississippi river, in February. Cargo saved.

Arkansas Mail.—Injured by collision with the *Robert Fulton*, near Westport, Ohio river, June 8th. Damaged by fire at Louisville, December 29th.

Avalanche.—Burnt to the water's edge at St. Louis, on the night of the 10th of March. Worth \$10,000; partly insured at Pittsburgh. Machinery now in the new *Avalanche*.

Batesville.—Sunk and lost near Batesville, Arkansas, in June.

Bay State.—Struck a bluff bar at Sliding Island, 22d November. Sprung a leak, and threw overboard thirty tons of freight.

Beardstown.—Sunk in five feet water, below the mouth of the Illinois river, early in January. Raised and repaired.

Ben Rush.—Burnt to the water's edge at Pittsburgh. No freight on board. Boat a total loss. One life lost.

Blue Ridge.—Burst her boilers three miles below Gallipolis; twenty or thirty lives lost, and many persons injured. Boat and cargo a total loss.

Belle Hatchee.—Struck a snag near St. Francis, Arkansas, and sunk, drowning four deck hands. The cabin floated off to within a few miles of Helena. Twenty-five of the crew and passengers were saved by the *Pike No. 8*. When the boat struck, a deck hand had seized the yawl and escaped, leaving all on board to the mercy of the stream.

Brunswick.—Run into at New-Orleans, on the night of the 5th of July, by two ships in tow of a boat. Lost one wheel, and otherwise greatly damaged. On the 31st of October lost, by running into a bluff bank, during a thick fog, at a point seven miles above Vicksburg. Went down in fifty feet water. Insured for \$10,000, boat and cargo.

Clarksville.—Totally destroyed by fire at Ozark island, Napoleon, Mississippi river, on the 27th of May. Captain Holmes and twenty or twenty-five of the crew and passengers lost. Insurance of \$10,000 on the boat.

Caledonia.—Struck a snag below New Orleans, about the 1st of January, and was lost.

Champlain.—Struck a snag and sunk in the Mississippi near Sublette's Landing, March 11th. Boat raised and cargo saved.

Cora.—Snagged on the 19th of March, on the Missouri, near Hermann. Bow hauled out of water, and damage repaired. Also, on the night of the 22d August, snagged and sunk in two feet water near Liberty landing. Raised and repaired.

Cambria.—Injured by a gale, and snagged, on the 19th of March, near Cairo. Damages repaired.

Charter Oak.—Injured by fire on the 10th of March, while lying at the St. Louis landing, and narrowly escaped the conflagration which destroyed four other boats. Totally destroyed by fire at Bayley's landing, on the Mississippi, on the morning of the 12th of April. She was freighted with grain and hemp for New-Orleans. Eight persons, including the first engineer, were lost, and many others fearfully injured. The boat was new, and valued at \$30,000. Insured.

C. Connor.—Struck a snag and sunk in twenty feet water, in Bayou Catalpha. Boat and cargo a total loss. No lives lost.

Connecticut.—Injured by snagging in Lower Mississippi.

Car of Commerce.—Sunk on the rocks at Louisville, in December.

Chalmette.—Fired by an explosion on board the schooner *Maria Thomas*, at New Orleans, July the 31st. Damage inconsiderable.

Confidence.—Sunk by collision with the *Edward Bates* at Hamburg, on the Mississippi river, September 11th. Raised.

Concordia.—Boilers exploded opposite Plaquemine, Mississippi river, September 17th. Thirty persons scalded and missing. Capt. Pease and Mr. Mosely, second clerk, mortally injured.

Circassian.—Burnt at Cincinnati 27th of February.

Defiance.—Lost at Liberty, Mississippi river, 27th of February, by running into the shore and sinking.

De Kalb.—Sunk on the Ohio near Paducah, in November, by being run into by the Clipper.

Edward Bates.—Boilers exploded, as was alleged, through inefficiency or carelessness of the first engineer, on 12th of August, as the boat was under way, below Hamburg, Mississippi river. Thirty persons were killed or missing, and thirty more badly scalded, many of whom died.

Grey Eagle.—Descending the Mississippi river below Randolph, on the night of the 10th of June, came in collision with the *Sultana* ascending, by which disaster the steam pipe of the *Grey Eagle* was broken and the hull of the boat much injured. A number of persons were scalded, and some drowned by jumping overboard.

Greenwood.—Lost cabin by running into shore, Kentucky river, December. Negro man drowned.

Germantown.—Sunk in three feet water at the foot of the falls of the Ohio, about the first of August. Raised and repaired.

Gondolier.—Sunk at Apple creek bar in November, by coming in collision with the *Josiah Lawrence*. Nothing but the machinery saved. One life lost. Boat insured for \$12,000.

Homer.—Badly crippled by collision with the *Childe Harold*, at Twelve Mile Point, Mississippi river, February 11th.

Herald.—Injured by collision with the *Die Vernon*, above St. Louis, February 22d.

Hoblochitto.—Struck a snag about thirty miles from Springfield, Mississippi, and sunk in eight feet water. Boat and cargo supposed to be a total loss.

Hendrick Hudson.—Burnt at Cincinnati, 27th February, five lives lost.

Hibernian.—Burnt at St. Louis on the night of the 10th March. Owned in Nashville, Tennessee. No insurance; valued at \$3,800. One life lost.

Highland Mary.—Collapsed a flue at Coal Port, Ohio river, 27th May. One person scalded. Burst steam pipe at St. Louis, July 26th. The second and assistant engineers and several other persons scalded.

Iron City.—Sunk at Hennepin, Illinois river, in August. Raised. Sunk by ice, and totally lost at St. Louis, December 31st. Several lives lost.

J. J. Hardin.—Burnt at St. Louis, March 10th. Valued at \$10,000. Insured.

Kinney.—Blew up on the Tombigbee, 26th May. Seven persons killed and eighteen wounded.

Lightfoot.—Burnt at St. Louis, May 9th. Insured for \$5,800.

Laclede.—Burnt at St. Louis, March 10th. Valued at \$15,000; insured for \$5,000.

Little Missouri.—Struck a snag at Gwinn's bar, Missouri river, 25th March and sunk. Valued at \$18,000; insured for \$12,000. Machinery and furniture saved.

Lady Madison.—Injured by snagging at Manchester, Ohio river, in the early part of May.

Laurel.—Sunk by collision with the *Anthony Wayne*, in September, on the Illinois river. Raised.

Mendota.—Sunk in seven feet water near St. Genevieve, latter part of January. Lost.

Monona.—Sunk in the Lower Mississippi.

Major Barbour.—Run into and sunk by the *Paul Jones* on the 3d of February, near Troy, Indiana. The second clerk, Mr. ALLISON, and seven passengers were drowned. After the sinking the upper works caught fire and were burnt. The boat was new, and insured for \$10,000.

Missouri.—Injured by fire at Memphis, on the 6th March. Was saved by the use of the "doctor."

Milwaukee.—Sunk on the falls of the Ohio, July 14th. Raised.

Narengo.—Burst one of her boilers about the middle of April, at Tunica Bend in the Mississippi. Captain, engineer, and five firemen scalded. A negro man jumped overboard and was drowned. Sunk in the Lower Mississippi by collision with the steamer *Harry Hill*. Boat and cargo a total loss.

Nameluke.—Injured by fire at St. Louis, May 9th.

Mail.—Burnt at St. Louis, May 9th. Valued at \$5,000. No insurance. The fire originated in the Ladies' cabin.

Missouri Mail.—Burnt at St. Louis, May 9th. Insured for \$5,000.

Mary.—Partially burnt at St. Louis, May 9th. Insured for \$5,000. Repaired.

Monterey.—Snagged and lost in the Kentucky river near Paint creek, December.

Meteor.—Cut in two, and sunk by the *Paris* on the 23d of August, opposite Cloverport, in the Ohio. The *Meteor* was bound for New Orleans, heavily freighted with produce; the *Paris* bound up. The accident occurred in a fog. Six or seven lives were reported to have been lost.

Mogul.—Struck a snag, which tore up her bottom from bow to stern, and sunk her immediately, at Cloverport, September 30th. Insured for \$10,000. Machinery and furniture saved. The boat was new.

Nathan Hale.—Snagged at St. Mary's landing in February. Repaired.

North Alabama.—Injured by the ice at Hanging Dog bar, in December.

North America.—Injured by collision with the *Josiah Lawrence* near Cairo, April 10th.

Oliver.—Burst one of her boilers near Mobile, on the 2d September. Captain Miller, her commander, had one of his legs broken, and was badly scalded. A passenger and one negro man were killed, and eight negroes scalded. Captain Miller was commander of the *Kinney* also at the time of the explosion on board of that boat, and had a leg broken at that time.

Odd Fellow.—Injured by snagging, sixteen miles above St. Louis, February 9th. Repaired. Ran into the woods at Diamond Island, Illinois river, in December. Lost chimneys, and a large part of her cargo.

Oella, No. 2.—Collapsed a flue on the Arkansas in November. Several persons were killed and others scalded.

Planter.—Burst a boiler at Twelve Mile Island, Illinois river, early in January. The boat was dreadfully shattered, and when towed to St. Louis for repairs, presented the appearance of a perfect wreck. Several persons, including an engineer, the chamber-maid, and three cabin passengers were killed, and several others badly scalded. Repaired. Sprung a leak at Pratt's landing 23d of August, and returned to St. Louis for repairs.

Paul Jones.—Struck a snag at Grand Chain, March 16th, sunk and broke in two.

Prairie Bird.—Injured by coming in contact with the *Beardstown* at the mouth of the Illinois river, August 6th. Repaired.

Palestine.—Burst a cylinder head at Island No. 40, in August.

Pelican.—Burnt at Biloxi, 23d of August. No insurance.

Plow Boy.—Sunk in the Missouri on the 6th of October, near Providence, by running on a snag. She was entirely new. One passenger drowned.

Pekin.—Sunk in the Mississippi above Chateau's Island, December 28th.

Piney Woods.—Burnt on Lake Ponchartrain on the 6th of October. Fifteen persons were known to have been lost.

Pilot.—Sunk in the Arkansas river. Boat and cargo a total loss.

Ringgold.—Lost on the 11th of February by sinking, at Pine Bluff, Arkansas river.

Rambler.—Sunk and destroyed on the 20th of March, near North Bend, Ohio river, by the falling of a tree across her bow.

Robert Fulton.—Ran on the rocks and sunk at Brown's Island, Ohio river, 19th of April. Raised and repaired.

Ridgeley.—Collapsed a flue on Black river, opposite Trinity, June 21st. One person was killed, and some twenty dangerously scalded.

Robert Weightman.—Burst starboard boiler on the 12th of August, at Fishing creek bar, Ohio river. One person killed and three scalded.

Rio Grande.—Sunk at Golconda, Ohio river, on the 26th of October, from Cincinnati bound for St. Louis. Boat badly broken.

Sea Bird.—While lying at Cape Girardeau, on the night of the 5th of January, bound from New Orleans to St. Louis, with twelve hundred kegs of powder on board, caught fire, and in a few minutes after blew up and sunk. No person was killed, all on board having fled to the shore as soon as the fire was discovered. The concussion caused considerable injury to the town of Cape Girardeau.

Sawatara.—Sunk by collision with the *Yazoo*, on the 10th of March, in the Mississippi, twelve miles above the mouth of the Ohio. New boat, and a total loss.

Sultana.—Injured by snagging, on the night of the 2d of August, fifteen miles above Cairo, on her way from New-Orleans to St. Louis. Three privates of the 2d Infantry were knocked overboard in their sleep and drowned. The snag was ninety feet long, and passed up through the starboard guards of the *Sultana*, in front of the wheel-house, knocking down a platform amidships, on which the soldiers slept.

St. Louis Oak.—Snagged opposite Providence, Missouri river, March 18th. Saved from sinking by bulk-heading.

Swan.—Sunk and lost in the Ohio near Marietta, November 10th. She was bound from Pittsburgh to St. Louis with an assorted cargo. No insurance.

Sawanes.—Struck on the Grand Chain, in the Ohio river and sunk. A total loss.

Sea Gull.—Injured by striking an abutment in the Kentucky river.

Trenton.—Burnt at Cincinnati, February 27th.

Tributary.—Burnt at Louisville, December 29th.

Talma.—Sunk in March, near New Madrid. Raised.

Time and Tide.—Struck a snag near Claiborne Island, in the Mississippi, on the 16th of February, and sunk in eight feet water. Raised.

Telegraph.—Burst a pipe at Louisville, April 3d, by which one of her engineers was injured.

Uncle Ben.—Injured by collision with the *Martha Washington*, on the 14th of June, near Rome, Ohio river.

Uncle Sam.—Injured at Bayou Sara, on the 18th of July, by running on the wreck of the *Old Clipper*.

W. H. Day.—Sunk in Arkansas river; boat and cargo a total loss.

Wyandotte.—Sunk to her hurricane roof, and lost, at Paw Paw Island, on the 21st of November, by striking a snag as she was rounding to to put on shore some deck passengers who were quarrelling. From twenty-five to thirty persons were drowned, principally deck passengers.

White Rose.—Destroyed by fire at Cairo, Illinois. Boat and cargo a total loss.

Westwood.—Burst her boilers twelve miles below New-Orleans. Twelve to fifteen lives lost, and several persons severely injured.

Yazoo.—Sunk and totally lost near New-Orleans, by running on a raft, 31st of March.

Yazoo City.—Sunk and totally lost by striking a snag thirty miles above Memphis, September 2d. She was bound from New-Orleans for Cincinnati, laden with railroad iron and salt.

Yallahusha.—Burst her boilers opposite Donaldsonville, Louisiana. Thirty or forty lives lost; boat burnt; cargo a total loss.

Zachary Taylor.—Ran into the woods on the Ohio river, and lost chimneys.

2. MEMPHIS AND ST. LOUIS CONVENTIONS.

In our last number we made allusion to the proposed convention at Memphis, when discussing the question of reaching the Pacific ocean across the continent. This convention, we perceive, in consequence of a general prevalence of cholera in the Valley, has been postponed until October next. In the meanwhile efforts will be made to collect reliable information for the convention.

We observe, also, that the people of St. Louis propose a similar meeting in their city, in October, and have issued a circular inviting delegates from all the States. It is our desire, should circumstances permit, to attend both conventions. We believe, as we have said before, that the enterprise is an American one, and are quite willing that the best point should have the precedence. At present our predilections in favor of Memphis are unchanged, though we shall listen a tentively to the other side.

3. COMMERCIAL COLLEGE AT NEW ORLEANS.

This department of the UNIVERSITY OF LOUISIANA is now organized and prepared to conduct the education of students, in mercantile and other business matters. *Classes will be formed from November until May.*

There will be two courses of instruction:

1st. *A Course of Lectures* upon—The rise and progress of the science of political economy; productive powers of labor; nature, accumulation, etc., of stock; progress of opulence in different nations; mercantile systems; revenue; sources of public wealth; growth and progress of the United States; ancient commerce; commerce in dark ages; in middle ages; growth of modern commerce; present commercial world; navigation; treaties; tariffs; banks; internal improvements; agriculture; manufactures; population; statistics, etc.

This course will consist of about twenty five or thirty lectures, during the winter, at such hours, and on such days, as may be most agreeable to the majority of the class.

Tickets for the course—which will be as interesting to all classes of citizens as to those engaged in or preparing for mercantile life—TEN DOLLARS.

2d *Course.*—This is intended for regular matriculated students. Instructions will cover the whole field of commercial education, given daily, in three or four recitations, etc.: Writing, book-keeping, commercial correspondence, accounts, account sales, invoices, general principles of commercial law, banking, insurance, exchange, partnership, factorage, guarantee, brokerage, bankruptcy, wrecks, salvage, freights, privateering, marque and reprisal, quarantine, custom house regulations, etc., sketches of eminent merchants. A course of reading in history and commercial geography and navigation, will be embraced.

Length of term occupied in this course will be five months, and the charge for each student \$50. The services of an accomplished tutor, in this department, will be obtained, and no pains spared in making the pupils proficient. Public examinations will also be had. Deductions will be made where students enter after the beginning of term.

In a country like ours, nothing can be more important than such a course of education. The student is at once fitted for the active, busy life, in which he must engage to reach success and fortune. Commercial colleges are growing up in various parts of the Union, and can be more important no where than in New Orleans.

Planters in Louisiana and the neighboring States, would do well to consider the advantages of this institution to their sons.

The advantages of public and private libraries, reading rooms, and business experience enjoyed in New Orleans, are unrivaled.

Students admitted at any time. See advertisement in this Review.

Address

J. D. B. DE BOW,

Professor of Political Economy, Commerce and Statistics, University of Louisiana.

4. PROPOSED ENDOWMENT OF THE UNIVERSITY OF LOUISIANA.

At the last session of Congress, a grant of the unreclaimed and swamp lands, within the State, was made to Louisiana, through the exertions of one of her citizens. It is thought that these lands will repay all the expense of drainage and reclamation and leave a net surplus of at least one million or one million and a half acres of land, valuable for the culture of sugar and other agricultural purposes. The Legislature of Louisiana will now have an opportunity of endowing, in a becoming manner, the noble institution which was in contemplation by the convention that framed our last constitution. It can make the UNIVERSITY OF LOUISIANA one of the proudest and most distinguished seats of learning in America, and attract to it students from half the Confederacy, from the neighboring islands, from Mexico and portions of South

America, and that WITHOUT ONE CENT OF EXPENSE TO THE PEOPLE. We propose that a portion of these reclaimed lands, say two or three hundred thousand acres, be reserved and appropriated as a *University Fund*, to be controlled by a Board of Administrators from the State at large. The grant from government is a pure gratuity, and it becomes a liberal State like Louisiana to apply a portion of it in the manner indicated. We have already a land fund for *school* purposes. The "*University Fund*," should realize an annual revenue of *forty thousand dollars*, the least sum at which an institution worthy of our position can be sustained. With this, fifteen professorships may be endowed, apparatus, library, cabinets, etc., provided, observatories and additional halls built, needy students educated free, etc. Without such endowment the University must degenerate into a mere grammar school, which its literary and scientific department is now in eminent danger of doing, despite of all the handsome structures erected or in progress.

The University should be required to *educate free* a certain number of students from the public schools of the whole State, and conduct *agricultural, geological, botanical, etc., surveys, of the State and analysis of its crops*, without expense.

It is worthy of remark, that Michigan, a new State, and with little advantage of position, has established a *University Land Fund*, capable of maintaining *twenty-six professorships*, furnishing magnificent buildings, apparatus, etc., and forming one of the most magnificent institutions in America! Alabama has a University Fund of \$250,000.

In the same connection we remark, that in the proposed donation to Florida of the unclaimed Ever Glades, the act reserves the lands for educational purposes for ever.

5. EDITORIAL NOTE OF TRAVEL AND BOOKS.

THE Editor left New Orleans early in June to attend the Memphis Convention. At Memphis he learned of the postponement of the convention, but had many interesting interviews with the leading gentlemen engaged in getting it up. The cholera was prevailing, epidemically, at Memphis, and at many of the towns passed upon the Mississippi and Ohio rivers, on his passage to Louisville. At Louisville he examined the branches of manufacturing industry, etc., and obtained the promise of a paper upon the progress of that city. From Hamilton Smith, Esq., an enterprising citizen and one of the founders of the manufacturing and mining town of *Cannelton*, on the Indiana side of the Ohio river, he received many attentions and spent several days at his delightful country seat, embellished with one of the finest libraries, gallery of paintings and statuary, to be found in the West. Mr. Smith is one of the three or four subscribers, only, which the great city of Louisville gives to the *Commercial Review*—so intimately addressed to its interests; but he has individually contributed to the amount of half a dozen subscriptions. From Louisville we passed to *Drennon's Springs* by steamer up the Kentucky river. This famous watering place, from which the present note is written, is only half a day's distance from Louisville, and is in one of the most beautiful regions conceivable. Romance lends her charms to every prospect—the sweep of hills, rising top upon top on every side to the horizon—the verdure—the dense forests. Every variety of water is furnished from the purest springs—the strongest sulphur, white, blue, black sulphur, chalybeate, etc. From Drennon's Springs we visited *Frankfort*, the capital of Kentucky, and the *Collegiate and Military Institute* at Franklin Springs, about six miles distant. Here our old friend and college mate, Col. Capers, the commanding officer and principal of the institution, received us with characteristic hospitality. Col. Capers is one of the best educated and most accomplished gentlemen of his age. At College we remember that his rank was always first. Since then he has filled various important posts—in the college of Charleston—in the Military Institute of South Carolina, for several years—in Transylvania college—and is now at the head of his own institution. Here is a new and high field of usefulness. The institute is located in the most delightful region of all Kentucky. The grounds are well laid out, and the buildings are of the most commodious and substantial character. Several hundred students could with ease be accommodated, and we predict that this number will yet be attracted by the unrivalled advantages of the place. At present we find some students here from points as distant as Louisiana and Texas, and the number from those quarters is on the increase. For full particulars about the school, the reader will refer to the circular among our advertisements.

We ought to have acknowledged the receipt, at Memphis, from our friend, Robert Josselyn, of a superbly bound and finished copy of his poems, entitled the "*Faded Flower and Other Song*," etc. They are delicate in sentiment, glowing in fancy, and of true poetic tenderness. We

should be pleased to make some extracts from this beautiful volume, did the occasion admit; but can only send to the author, at his *Holly Springs*' home, our congratulations and thanks. We may refer to him again. The work can be had of J. B. Steel, New Orleans.

6. TO THE PLANTERS.—SUGAR AND COTTON.

The importance of an *AGENCY* in New Orleans in connection with the Review, to aid the planters in the *purchase and sale of estates*, has frequently suggested itself. We have determined to start it. As the Review circulates largely in all the southern and western States, and is now getting a northern circulation, planters will have an opportunity of offering their estates to the best advantage. They will be charged for the advertisement of estates, according to the space occupied, and time advertised, *on reasonable terms*, in the pages of the Review, as will be agreed upon. When sales are effected through the *AGENCY*, the usual commission will be charged. *Editorial notices* will be called to the estates. Messrs. H. Weld & Co., publishers of the Review, able and energetic business men, will take *exclusive* charge of this department. In the present number we call attention to a large plantation in Attakapas, Louisiana, among our advertisements.

☞ All letters relating to the business of the Review will be directed to Weld & Co., New Orleans; all relating to editorial, to J. D. B. De Bow, care of Weld & Co., publishers Commercial Review, New Orleans.

7. OUR BOUND VOLUMES COMPLETE.

We have still a few sets remaining of the Old Series of the Commercial Review, in handsomely bound volumes, 1846—1849. We wish those of our subscribers who have not the work complete would order them, or have them taken by the public or private libraries in their vicinity. In a short time it will be impossible to obtain them on any terms, as the edition printed was small. We are anxious to distribute the volumes, and will deliver them at any points.

8. OUR CONTRIBUTORS.

We have several papers on hand for publication in our next. Our acknowledgements to friends for new subscribers and remittances will also be made. We have received an elaborate answer to Ellwood Fisher's Lecture, the substance of which will be given. We invite papers upon the Slave Laws of different southern States; also, contributions upon Cotton and Cotton Manufactures, and upon the Wealth, Progress, etc., of each of the southern and western States. We are now preparing an elaborate one ourself, upon Kentucky. Several able articles upon Slavery at the South will soon appear.